HUSBANDRY Anatomized,

OR,

An Enquiry into the Present Manner of Tilling and Manuring the Ground in

SCOTLAND

For most Part;

AND

Several RULES and MEASURES laid down for the better Improvement thereof, in so much that one third part more INCREASE may be had, and yet more than a third part of the *EXPENCE* of the present Way of *LABOURING* thereof Saved.

By JA: DONALDSON.

EDINBURGH,
Printed by *JOHN REID.* in the Year, M. DC. XC. VII.

To the Right Honourable,

PATRICK

Earl of MARCHMONT,
Viſcount of *BLASONBERIE*
Lord *POLWARTH*, Lord
High Chancellour of

SCOTLAND

And the whole Remnant
Lords of His Majeſties Moſt
Honourable Priy
COUNCIL:

Right HONOURABLE,

IT may be looked upon as a Peice of heightened Arrogance, for ſuch a Perſon as I am, to *Preſume* to Endit any thing that may deſerve your Lordſhips Cognizance; And truly,

truly on any other Subject, but this most Plain, and Genuine Art of *Husbandrie*; I had scarce adventured to publish my Sentiments, and much less presumed to offer the same, to such August, Venerable, and Judicious Criticks, Who are acquainted with Learned and Eloquent Treatises on all Subjects: But where there is greatest Judgement, there useth to be most Discretion; Which gives me Confidence and Ground to hope, that what I here offer with Respect and Good Will, allanarly with an Eye to the publick Good, shall find Acceptance; Thô from the Stile of Writing or Congruity of Language, no such thing can be pleaded for;

Rhetorick

Rhetorick being that which neither the Subject doth require, nor my ſimple Genius can Aſpire to.

Perhaps two Queſtions may be asked, Concerning my Experience in Husbandry, and Motives in publiſhing thereof. To give a poſitive and diſtinct Anſwer to both, will require an abridged Hiſtory of my own Life, which I ſhall with all Brevity repeat, becauſe it will be a kind Kye to the following Sheets.

I was bred in the Country, Till I was upwards of twenty years of Age: And my Father keeping Servants and Cattle for labouring a part

of

of these Lands, which heritably belonged to him: I had occasion to acquire as much Knowledge in Husband Affairs, as was practised in that place of the Country. Some few years before the Revolution, I applyed my self to the study of Traffick and Merchandizing: But as soon as it pleased GOD to call his Majestie (then Prince of *Orange*) to relieve these Kingdoms from the Imminent Danger They then stood in; I judged it my Honour and Duty to concur with such a Laudible and Glorious Undertaking; And according to my Ability, testified my Affection to the Cause, several wayes needless here to repeat; And especially

ly

ly in Leavying a Company of Men for his Majesties Service, and served in the Earl of *Angus* his Regiment, till the second day of *February*, 1690. When that Regiment was reduced from twenty to thirteen Companies.

I was disbanded, But through the scarcity of Money in the Exchequer, and great need of keeping an Army on foot; Hitherto I have received no Reimbursement of Money I Depursed on that Occasion, nor what *I* can claim of Arriers. But the chief Cause of my being reduced to the present hard Condition I am in, was, The leaving my Business in Confusion, when I engadged in His Majesties

Service

Service, not getting Goods in my Custodie disposed off to Advantage, nor Debts due to me sought in; And on the other hand, my Creditors sued for what was owing them, I was obliged to satisfie, and pay several other Summs I was Caution for, to my great loss: By all which, and several other misfortunat Accidents, my Credit was much broken, and Estate near exhausted. Notwithstanding of all which, I wrasled under all these Disadvantages, still thinking to have recovered, till within this two or three years. At length I was obliged to succumb, my Creditors attacking all my Effects; I was necessitat to leave the Kingdom

Kingdom for a time, and now returning empty handed, *I* began to Reaſon thus with my ſelf: What? Have *I* learned nothing from all that *I* have ſeen or heard, whereby *I* can be Uſeful to my ſelf or the Common-Wealth? And at length came to this Reſolve, *I* have had ſome Experience of the Way and Manner of Labuoring the Ground in this Countrey; And I have ſeen their Way of mannaging thereof in ſome other Places, which is generally done to greater Advantage: And when I began to try what might be the Cauſes, why there is ſuch difference of Increaſe in one place, more than another, I found it is not altogether from the difference of

the Climate, nor Primitive Conſtitution of the Earth.

And as ſoon as I thought of publiſhing this, I thought it my Duty, (with all Humility) to preſent it to your Lordſhips; in reſpect you are not only Proprietors of a great part of Lands in this Kingdom, but alſo in Authority and Dignity, to recommend this Project, both by Example and Precept; And if it may ſeem practicable in your Lordſhips Eyes, and any Benefit to the Publick come thereby, I ſhall reckon it a ſpecial Mercy of GOD (who by his Overruling Providence oft times worketh

that

by contrary like Means) that I am reduced to this penurious Condition; For if it had pleaſed GOD to continue me in proſperity, I beleive thisProject had never entred my thoughts. I am not ſo ſelf conceited, as to apprehend there is any great Miſtery in what I have here publiſhed, for it is a thing many have not only known, but practiſed; But never any that I yet ſaw, hath publiſhed it in thir Terms, for (as I noted in page 125) the grand miſtake lyeth in Miſcalculation; And I foreſaw, if I had uſed the common Method of writing on this Subject, it had been objected, the Profit would not overballance the Expence; For which Cauſe, I have

chuſed to go thorow every *Particular*, and ſhew how and from whence the profit doth ariſe.

I know Epiſtols Dedicatory, are uſually ſtuffed with the *Praiſes* of thoſe to whom they are directed; But the like *Practiſe* were here ſupperfluous (tho I were capable of ſuch a Task) as the Poet who was deſired to write in praiſe of *Alexander*, anſwered; *Who hath diſpraiſed* Alexander? So I think my dull Pen attempting to applaud Unqueſtioned Vertue, were not only Vain, but Injurious. Wherefore, I judge it my beſt Eloquence, to be altogether ſilent, and let your Enemies judge whither Real Vertue doth not dwell in the Breaſts

of

of these whom Divine Providence hath exalted to such Dignity; And the most Serene, August, and Judicious Monarch this Day in the World, maketh choise of for His Counsellours. But to avoid *P*rolixity, and encroaching upon your Lordship's *P*atience, I shall conclude. Now that all Honour, Prosperity, and Endless Felicity, may alwayes attend You, is the Earnest Wish, and Unfeigned Prayer, of

Your LORDSHIPS *most Humble and Obedient Servant,*

Ja: Donaldson.

ERRATA.

Page 8 *Line* 8, *for* Vigitables *read* Vegetables, *and ſeveral other Places*: *Page* 25 *Line* 12, *for* only, and *read* only add. *Page* 107 *Line* 1, *for* 5 *read* 4, *ibid*: *Line* 3 *for* 200 *read* 1600. *Page* 108 *Line* 10 *for* 4907 *read* 7907.

As for any other Literal Errors, incident to creep into all Books, throw miſtake, be pleaſed to correct them your ſelves; And if it were proper here to make an Appologie for my ſelf, I might plead the more to be excuſed, in reſpect I have been ſo haſtened to have this finiſhed before the Seſſion ſate down (and other Reaſons needleſs here to repeat) that before I wrote the ſecond Sheet, the firſt was at the *Preſs*, and never after had I one Sheet of Coppy ready at once, the whole time it was a printing.

THE

THE PREFACE to the READER

NEighbours and Country men, this ſmall Treatiſe may ſeem to bear a Title which in the following Sheets cannot be made good, I confeſs before I took a particular look into every Circumſtance of this Project, I could ſcarce beleive ſuch a thing could be: But after peruſel, let the Judicious Reader Judge how far I have accompliſhed my Undertaking. I know it is ſeldom that any new Project is much encouraged by moſt of you, and he that propoſeth it reputed a Wiſe Man: However, I have rather choſen to hazard upon the Cenſure of all, than conceal that which may be profitable to any; And ſeing the chief miſtery of this Project conſiſts in your Prudent and Exact Calculation, (as I remarked in my Anſwer to the 2d. Objection) wherefore I yet once more Recomend it in this and all other Caſes.

I doubt

I doubt not but ſome may caſt it in my Teeth, ſince I am ſo good at Teaching others how to improve their Stocks; How cometh it to paſs, that I have been ſo far miſtaken in forecaſting of my own Affairs? To which I Anſwer, Perhaps I may now be a better Gameſter than formerly, while my Carts were a playing. Moreover, it was not altogether my want of Skill in Calculating, that made my Projects to miſgive; But grant it to be as ye ſuppoſe, it doth not follow, but my Advice may be both Profitable and Reaſonable: A Mariner that hath ſuffered Ship-wrack, may be as good a Pilote in that ſame Channel where he loſt his Ship, as another that has come that ſame Way, with a Proſperous Gale, and Full-Sea, ſailing over the hide Rocks, and dangerous Banks. If you think my Advice Reaſonable, take it Gratis, *and welcome; If not, buy Experience at th Rate I have done.*

HUS-

HUSBANDRY Anatomized,

OR,

An Enquiry into the present manner of Manuring the Ground in *Scotland* for most part, and several Rules and Measures laid down for the better Improvement thereof, &c.

WHEN Almighty GOD Created the World, by the Word of his Power, He could have made Men to live without Food, as well as Angels: Or yet have made the Earth to bring forth all manner of Food for him without La-

bour or Industry, as it doth for Cattle and creeping things: But so it was, that He that is Infinit in Wisdom saw it meet to asign Man a dayly exercise in earning his Food and Rayment, whereby he is not only diverted from following some bad Practice; But also that thereby he may see his great frailty, in that he is not able to live without dayly Subsistance and Refreshment, from Creatures inferiour to himself. As also he thereby may learn to know his great need of Spiritual Nourishment to his Soul, in as much as it is more precious than the Body, together with many other profitable Lessons.

No doubt if Man had continued in the Estate of Innocencie, his Labour had been rather a Pleasure than a Toyle, as may be gathered from the Sentence pronounced against *Adam*, where it's said, *From thenceforth by the*

the Sweat of his Brows he should Earn his Bread, untill he should return unto the Dust; 'Tis plain enough it had not fared so with him, were not for his Transgression: And upon *Cain's* Transgression, the Earth is again Cursed, that thenceforth it should not yeeld its strength. What wonder tho before this time it had become a barren Wilderness, considering the dayly multiplyed Transgressions of the Children of Men? But this being extraneous to my purpose, and that which I am not capable to decipher, I shall remit it to the Contemplation of Divines.

But that I may come to the purpose, I shall first take some general Observations concerning the present Constitution of the Earth.

2. Lay down certain Rules for bringing every kind of Ground to a right Temperature, so far as may be.

3. An Enquirie into the present manner of manuring the Ground, through most part of this Kingdom.

4. *Lay* down several Rules for manuring it to greater advantadge, tho not inclosed.

5. How much more by Parking and Inclosures.

6. Concerning *Stock*-keeping.

7. Something concerning *Plantings*.

8. Some directions how to sow several Garden Seeds, and *Roots*.

And lastly *I* shall enervat what Objections *I* conceive may be framed against any of my propositions.

CHAP. I.

Of *the* Earth's *Constitution in general.*

AND first, I say, notwithstanding that Proverb is of verity, *There is never a Tale without a Reason*, That is, there is no Effect, but from some certain Cause; yet, 'tis as true there may be many things really true in Ef-

fect

ſect, that we do not well know from what Cauſe: And ſeing I am neither Philoſopher nor Alchymiſt, I hope the moderat Reader will not altogether diſprove or miſregard my propoſitions, where the matter of fact is evident, altho I cannot give a Philoſophical definition of the Cauſe: Nevertheleſs, that I may not deſire the Reader to credit my bare Aſſertion without any ground, I ſhall in ſome meaſure endeavour (according to my weak capacity) to give him ſatisfaction in this point.

And firſt, I ſay, it cannot be denyed but ſome places of the Earth are Moiſt and Cold, and other places Hot and dry. The cauſe of which differences ſome aleadge to be by the influence of the *Planets* and other Cœleſtial Bodys; (by which alſo they make all Minerals to be Engendered). I ſhall not ſay but there maybe much truth in this, for in theſe

climates

Climates lying neareſt the Equinoctial, geting a larger ſhare of the *Sun's* heat, are generally more fertile (providing it be not ſcorching) than other places more remote, as *I* ſhall afterward ſhow.

Neither ſhall I altogether deny but other *Planets* may alſo have ſome influence; Notwithſtanding of all which I cannot be perſwaded through influence of the *Planets*, there can be within the bounds of a mile of ground (or perhaps leſs) one field hot and ſandy. Another cold clay ground. A third Mariſh and Boggie. A fourth dry Heath ground, A fifth a tollerable mixture of all theſe, &c. Now ſeing theſe differences cannot be from the forementioned Cauſe, it muſt be from its primitive Conſtitution, or I ſhall not dive any farther into it.

To enquire any more after the Cauſe of this, is like a perſon coming

where

where there is a house on fire, and in stead of endeavouring to quench the *Flame*, calleth out, *How did the Fire break out? How was the House kendled?* The thing required in this case (seing the Effect is unquestionable) is rather to remove the *Maladie*, than enquire any farther after the *Cause*.

I shall therefore proceed to lay down several Rules, whereby to bring each of these different kinds of Ground to such a temperature, as it may be in a condition to nourish any *Plant* or Seed therein sowen or planted; which is done by removing the superfluity of that quality that prevaileth, and strengthening of that which is weak. For as in humane bodys, there are a Composition of the four Elements, and through the superfluity, or deficiency of any one or more of them, Diseases are contracted and fomented, so in the Earth there is the like

Com-

Compoſition of qualities, and ſo far as heat, Moiſter, cold or dryneſs, exceedeth the bounds of a moderat temperatur, ſo far is ſhe Diſeaſed and rendred unfruitful.

I know ſome aſſert the Salt or hot quality that is in the Earth, is the only cauſe of growth of Vigitables; And conſequently, barreneſs to be only for want of this quality: I confeſs where this quality is wanting altogether, Barrenneſs cannot but enſue: And alſo; that this quality is that which is moſt frequently deficient in our cold Climate. And moreover, thô it be ſtrengthned or aſſiſted, yet by teiling and Manuring of the Earth its extracted forth into the ſubſtance of grain, and other vigitables, and ſo needeth frequently to be renewed. Notwithſtanding of all which with ſubmiſſion to men of greater Judgement, I am of opinion there may be abundance of this Hot or

Salt

Salt quality where there is as much barrenneſs, as any where elſe.

But that I may confirm this aſſertion, I ſay, *I* have ſeen a field fatned ſufficiently with Dung, yet by reaſon of great drowght, it has yielded ſmall increaſe, yea, ſcarce one third of what it has done at other times; The cauſe ſurely was not for want of this Hot or Salt Quality, but alanerly for want of Moiſter. Again, I have ſeen a field that wanted not enough of this Hot quality, & by exceſſive *Rains* (after it has been tiled and ſown with *Good Grain*) has produced little elſe but weeds, and Thriſtles, for that ſeaſon, alſo *I* have ſeen ſtrong Clay ground, where the clods remained firm and unbroken did not produce ſo much by far, for that Seaſon, as at other times, when by reaſon of the Froſt in the Winter, the clods have eaſily Mouldred to pieces, Notwithſtanding it was otherwayes, in

no better Condition, which makes me believe the want of Air, (tho there be a moderat temperature of the other qualities) hinders the growth of Vigitables, for tho it want not Air in the ſtalk, which is above ground, yet in this confirmed Earth, the Air cannot have free acceſs to the Root. Another thing which confirms me in this opinion, is, where Trees grow cloſs, or near the Bottom of hedges, little or nothing doth grow. Moreover, I have ſeen in the Bottom of a dung hill (*Plewed* and ſown) tho round about the borders thereof the corn has been extraordiner ſtrong and good, yet where moſt of the ſtrength of dung did remain, little or nothing did grow, which ſays the exceſſe of this hot quality, (tho there be a moderat temperature of all the reſt) doth hinder fruitfulneſs.

I obſerved formerly that within the bounds of a mile of ground in

ſome

ſome places, there may be ſeen fields in equal circumſtances, as to the manner of Situation, and yet differing in other circumſtances very much, for which I can underſtand no cauſe ſave the primative conſtitution, but for Valys being generally more fertile then hills, I humbly conceive one or all of theſe reaſons may be given; Firſt, The internal heat of the earth, warming the Air next unto it, and in reſpect the hills are farder extended from the center than the Valys, and being ſo much higher, where the Air is more pure and leſs warmed by this internal heat, they are ſo much colder, and conſequently more unfruitfull. Or ſecondly, If it be ſaid it is not the internal heat of the Earth that warmeth the Air, but rather the reflex heat of the Sun Beams, it is the ſame thing upon the Matter, for whither the heat be from the Earth it ſelf, or the Sun's heat reflecting;

ſtill, the Valys have the advantage of the Mountains, in reſpect the Air that is loweſt receiveth the greateſt ſhare thereof. 3. So much as the hills are higher than the Valys, they ly the more open to the Air, which has a quicker motion, the higher it is, and Ait moved is much colder than when it is not moved, whither it be in that it is warmed by things nixt to it when it ſtandeth ſtill; and when it is moved, freſh Air ſtill approaching, which has not been warmed, be the cauſe why the one is warmer then the other, I ſhall not determin. But the matter of Fact is beyond controverſy, that the Air moved is much colder than when it is not moved, and Valys being much ſheltered from the violence of Storms are keep'd ſo much the warmer, and conſequently are the more Fertile.

Moreover hills being ſteep the Rain runneth preſently off ſo ſoon as

it

it falleth, and doth not only carry that ſalt or hot Quality that is in it ſelf away; But if the Ground be not well Soarded, carryeth part of the Earth alſo away with it ſelf. And on the contrare, Valys lying near level, Rain cannot run ſuddenly off, but getting time to ſoak or ſink in the Ground, the ſalt Quality remaineth ſtill, whereby the Eath is much Inriched.

By the above mentioned Obſervations, you may ſee it is Heat principally that makes the Valys more fertile than the Hills: It follows, that if other Ground can be warmed to the like degree, it may thereby be made as fertile. I ſhall therefore in the following Chapters, give ſome *Directions*, how this may be performed, which may be done two wayes: Firſt, By aſſiſting the Internal Heat; Next, By reſtraining the External Cold, of each in their places.

CHAP.

CHAP. II.

How to bring every kind of Ground to a right Temperature, so far as may be.

NOw, to follow the Example of a skilfull Physitian, after finding out the Disease, he prescriveth Medicines sutable to be applyed to each vatious Distemper, so shall we after this search and enquirie into the Nature and constitution of these different kinds of ground above mentioned, See next what measures are to be taken, to bring the same to a moderat temperature. And as the Apostle says in another case, Paul *may Plant, and* Apollo *may Water*; *But 'tis GOD that giveth the Increase*: So let men be never so industrious or carefull about their worldly Affairs, yet if GOD give not a blessing to the means, their labour is in vain; For how often is it seen, that after a hopeful Spring, an un-

unſeaſonable Summer maketh a ſcarce Harveſt, and after a ſeaſonable Summer, & good appearence of a plentiful harveſt by intemperat weather (a few weeks) much of the fruits of the Earth have been conſumed,

I am not ſo much an Aſtrologer, as to impute the cauſe of this to be from the influence of Cœleſtial Bodys, and by the Regency or *Planets* of this and the other diſpoſition, together with their Conjunctions, Squares, Angles, & Opoſitions, and ſo forth. Such various effects are produced (and that not only in the Elements): But alſo the like influence have they on humane bodys, both in their Diſpoſitions and Actions, is the Doctrine of moſt Aſtrologers. What ever be the Opinion of ſuch Men, yet 'tis beyond contraverſie they go about to ſeek the neareſt, that go to the Stars to ſeek knowledge in futer Events.

I know ſo much of Aſtrologie, that I know Mathematicians may calculat the courſe of the *Planets*, and know in what Schem or Form the Cœleſtial Bodys ſhall be for a great many years to come; And alſo, they may be informed by thoſe of their own profeſſion that have lived many hundered years agoe, what was the Schem of the Heavens when ſuch & ſuch Events fell out, and from this they conjecture when the Cœleſtial Bodys come again to be in the like Poſture or Frame, the like Events they ſhall befal.

I ſay, notwithſtanding of what Knowledge the beſt *Mathematicians* may have in future things, by theſe Conjectures, there can be nothing certain from theſe Cauſes; For I hope none of them will deny, but he that gave theſe Creatures a Being, and appointed them their Uſes and Offices,

Offices, can work whatsoever he pleaseth, without their concurrance or assistance: But so it is, he hath forewarned us to be assured, if we persist in sin, we may expect to be punished as other people, who have committed the like sins in times past: And we have frequent instances in the History of the *Jewish Church*, what was the causes of the Judgements inflicted on them. I know not how the Planets were disposed, in all the Revolutions of that people: But the Pen-man of that Sacred Storie, attributes all the *Mutations* of these times, to other Causes. I am of Opinion, that such as are well versed in *Sacred Writ*, and acquainted with the Life and Conversation of a People, may read their Destiny, better than all the Astrologers in *Europe* can do by their Mathematical Calculations.

None I confess can be positive as

to the Time or Manner, GOD ſometimes giving a longer or ſhorter ſpace of Repentance as he pleaſeth; And becauſe He doth not alwayes puniſh ſinners in the very act, therefore many miſtake the cauſe of their puniſhment, as the *Iſraelites* in *Jeremiah's* time, being by him reproved for their idolatrie, aſſuring them that the afflictions they were then under, proceeded from that cauſe: They abſolutely defend themſelves, alleadging he went about to deceive them, *Jer:* 44. 17. *But we will certainly do whatſoever thing goeth forth of our own mouth, to burn Incenſe to the Queen of Heaven, and to powr out Drink-offerings unto her, as we have done, we and our Fathers, Our King and our Princes, in the Citys of* Judah, *and Streets of* Jeruſalem, *for then had we plenty of Victuals, and were well, and ſaw no evil. But ſince we left off to burn Incenſe to the Queen of Heaven, and to pour out Drink-offerings unto*

unto her, we have wanted all things, and have been consumed by the Sword, and by the Famine. We want not abundance in our times, that mistake the Language of Providence, not one white less than thir *Israelites* did; But meddling with them not being to our purpose, I shall let them stand and fall to their own Master. What I designe at present, is to have my Reader perswaded to a dutyful Obedience unto the Law of GOD, and to depend on Providence, for good Success in his Lawful Affairs, and for a Blessing on the Fruits of the Ground, rather than believe Good or bad weather, or any other Events cometh by guess, or by the common course of the Starrs.

Now, To return to our purpose, let us see what kind of Nourishment or Medicine is required to refresh the Ground withal, or to bring it to a

temperat Conſtitution; And that is, Firſt, Dung of all ſorts, & Vigitables of all kinds, providing they be firſt putrified or rotten; Yea, all kind of Animals, and Lime, Aſhes, *&c.* Tho ſome curious perſons recommend Horn and Hove, Blood and Gutts of Cattle, and Shells of Fiſhes, and *Salt-Peter*, *&c.* as very ſtrong and durable Nouriſhments for the Ground. Yet ſeing theſe things cannot be had by every one, I ſhall only ſpeak of theſe which may be had every where, *Viz:* Dung of Cattle, Aſhes, Lyme, Marle, and Sea-ware, any of which will ſtrengthen any kind of Ground; Yet ſome of them are ſtronger than other, and each of them proper to be applyed to different kinds of Ground, as I ſhall immediatly remark.

And firſt, I ſhall begin with Mariſh Ground, if it be ploughable, then let it

it be made in high Riggs, Sheep or Horſe Dung is fitteſt for this kind of Earth, if it be ſo moiſt that it cannot be plewed, draining the Water from it by Trinches or Ditches, and ſtrawing it with Lime, or Aſhes of Wood or Coals, will much help the growth of Graſs, and prevent the growth of Ruſhes, or any other hurtful weed.

2*ly*, Where the Earth is ſandy and hot, let it be fatned with Cow-dung, or Mariſh-earth, becauſe the Conſtitution thereof is too hot already, Dung of a contrary Quality muſt be applyed: But if it be exceſſive hot, it can hardly be made Fertile, unleſs a great quantity of Clay or Mariſh Ground be laid upon it, which will be more expenſive than all the Profit coming thereby can repay. In that caſe, I know nothing better than take what Graſs it produceth of its ſelf,

and

and not ſpend Seed and Labour in vain; For tho in a wet Seaſon it may bear a pretty good Crop, yet ſeeing a drowght may as readily happen, it is ſaffer to beſtow Expence on other Ground, where more certain Profit may be expected.

3*ly*, Strong Clay Ground is that we ſhall ſpeak of next, the Nouriſhment moſt proper for it, is Horſe or Sheep dung; This kind of Earth is capable of as much Improvement, as any kind of Ground whatſomever: Yet ſeeing there is two *Maladies* in it to be removed, which is Cold and Aſtringedneſs, or Hardneſs, eſpecially when a very dry Summer follows a wet Spring; Beſide the dung above mentioned, take Sea ſand, or other ſandy Earth, and ſpread upon it as you do dung; This both helps to keep the Ground open, and alſo mitigats the Cold. Another thing that makes this

this kind of Ground open and tender, is fallowing: And alſo ſowing it with Peaſe or Beans, which at leaſt ought to be ſowen on this kind of Ground, every third or fourth Year.

4*ly*, The next kind of Earth we ſhall ſpeak of, is Mountainous, wild, and over-growen with Heath or Heather. This Shurb only groweth on cold dry Ground, where ſcarce any thing elſe can grow: Nevertheleſs, by removing that cold dead kind of light Ground that is upon the ſurface of the Earth where this Heather groweth; The ſoil may be made pretty Fertile. The manner of mannaging this kind of Ground, is as follows, *viz:* To digg it up in Turffs, which being dryed, gather in ſmall Heaps and burn, and ſpread the Aſhes in *September* or *October*, then ſow it with Wheat, and plough it down with a light Furr; The firſt years Crop will do

do more than reward your Labour, (ten or twelve Bolls per Aiker, being the leaſt Increaſe you may expect) and always afterwards, it will be fit for Grain or Paſture, as your other Ground: But becauſe moſt People in this Countrey, are Strangers to this kind of Labour, I ſhall tell what Method they take in other places, to make this wild Ground Arrable.

Where the Heather is very rank or ſtrong, they take a Hoe much in form of an Each, and therewith ſtricking as when a Carpenter heweth with an Each, going round all the quarters of each Turff they digg it up; Or elſe they firſt ſlit the Ground with a kind of Plough they have for that Uſe, making each ſlit about a foot diſtant from one another, then croſſing it again, all the edges of the Turff are cut, ſo that they need but only cut them in the bottom; Eight Men may digg

digg an Aiker in a day, where the bottom of the Turff is only to be cut, but if the Ground be not flit as above-said, scarce will they digg one half thereof. You may flit your Ground either with your common Plough, by lengthening your Culter three or four inches lower than your Sock: But that which I judge may be more easie, and hasten your Labour much more, is to make a Slyp after the common manner only, and a Cross-beam, and therein you may place two Culters at least, providing they be thin and of good Mettle, then lay a weight upon the said Slyp, and where-ever it is drawen, it will flit the Ground alse deep as the point of your Culters goeth.

CHAP. III.

How to manage the Ground to better Advantage, tho not Incloſed.

SEeing all that can be said in Ge-

neral, can never point out the Case so clearly, as condescending on Particulars doth; I shall therefore lay down the whole Matter in every Circumstance, which I shall do by comparing the present way of managing the Ground, by that which I shall propose, But because every kind of Ground is not alike, some being Valys, which of themselves are more Fertile than Hills or Mountainous Ground, and some lying near Borroustowns, geting a greater quantity of dung than its own product can make, by which it is in a prettie good Condition already. But seeing I am to give only one Instance, it shall be that which is commonly called Dale-ground, that is, such Lands as are partly Hills, and partly Valys, of which sorts may be comprehended the greatest part of Arrable ground in this Kingdom; And as is said, tho this one Instance cannot be

an infallible Rule for managing every kind of Earth by, yet in some measure, any person may know how to manage every kind of Ground; For, if the Ground be naturally Fertile, or lying near any place where dung can be had: More Land may be taken into dunging, and where the Ground is naturally barren, less must be taken in dunging, than what is here proposed; In a word, I would give this a general Rule, to dung no more than can be dunged sufficiently.

Of this kind of Dale-ground above mentioned, I shall suppose a Farmer to have a Lease or Tack of threescore Aikers, at three hundered Merks of Rent *per annum*, (perhaps some who are not acquaint with Rural Affairs, may think this Cheap, but these who are the Possessors thereof, think otherwayes, and find difficulty enough to

get the same payed, according to their present way of manuring thereof, as anone you shall see.) But that I may proceed to the Comparison, I shall show how commonly this Farme Room is managed; It is commonly divided into two parts, *viz.* one third Croft, and two thirds Out-field, (as it's termed) The Croft is usually divided into three parts, *To wit*, One third Barly (which is alwayes dung'd that year Barly is sowen thereon) another third Oats, and the last third Pease. The Out-side field is divided into two parts, *To wit*, The one half Oats, and the other half Grass, two years successively.

This Ground being improven as above represented, let us see next what the Labouring of it may cost, and what may be the Product thereof: First, The Product that may be supposed to be on each Aiker of Croft

Croft four Bolls, and that of the Out field three, the *Quota* is seven score Bolls: This we may reckon to to produce good and bad Seasons, the Better to mend the worse, which we shall also reckon at five pounds *per* Boll, Cheap Year and dear year, one with another; This in all, is worth seven hundered pounds.

Then let us see what profit he can make of his Cattle: According to the division of his Lands, there is twenty Aikers of Grass, which cannot be expected to be very good, because it gets not leave to ly above two years, and therefore cannot be well foarded: However, usually, beside four Horses, (which are keeped for ploughing the said Land,) ten or twelve Nolt are also keeped upon a Ferm Room of the above mentioned pounds: But in respect of the badness of the Grass, as said is, little Profit

is

is had of them, perhaps two or three ſtone of Butter is the moſt can be made of the Milk of his Kyne the whole Summer, and not above two Hiffers brought up each year. As to what profit may be made by bringing up young Horſes, I ſhall ſay nothing, ſuppoſing he keeps his Stock good by thoſe of his own upbringing, both in this Caſe, and in that which I ſhall inſtance by and by: The whole Product then of his Cattle cannot be reckoned above fifty Merks; For in reſpect his Beaſts are in a manner half ſtarved, they are generally ſmall, ſo that ſcarce may a Hiffer be ſold at above twelve pounds; The profit of his Beſtial therefore, cannot exceed what is ſaid.

By what is ſaid, you ſee the whole Product of this Farm Room, exceeds not the Value of ſeven hundered and thirty three pound, or thereabout;

The

The Grain and Beſtial being all he has to make Money of, except what Vertue the Good wife and her Maid can make, which is needleſs here to enquire into; For let it be what it will, the way of managing the Ground, according to this project, will rather further than hinder them in their Frugality.

Therefore I ſhall now try what Expence or Out-Coſt the managing of this Room may be: And not to mention the firſt Coſt of Stocking of it, which may be about the matter of 8 or nine hundered pounds, the Intereſt of which in Reaſon, ought to be allowed out of the firſt end of his profit. But I ſhall proceed, you heard this Ferm Room produceth one hundered and fourty Bolls of Grain *per annum*, fourty of which may be allowed for the Mantainance of his Family, and ſixteen for the uſe of his

Horſe

Horses, fourty to pay his Rent withal, and as much for Seed; This in all makes one hundered and thirty six Bolls, only four Bolls remains for paying of Servants Wages, which cannot be less than seventy or seventy five pounds, for he can labour it with no fewer than two Men, and one Maid, beside a Herd in Summer, and other Servants that are required in Harvest: Yet nothing more hath he to furnish his Family in Cloaths, and other Necessarys, except the Industry made by his Wife and Maid, or if he can spare some of the fourty Bolls allowed to be consumed in the Family, it may help to pay part of his Servants Fees.

Now I shall proceed to show what Method I would have Fermers take in managing their Land. You heard, two Men, a Boy, a Maid, and four Horses, was required to labour the

Room

Room above mentioned, I shall seek no more to labour one half more Ground: And if the product of both be equal according to their proportions, then is the expence of Seed, and labouring of this additional thirty Aikers, wholly saved, which is a considerable profit: But I shall make it evident, not only shall this expence be saved, but also the product of the Ground shall be more than that of the first instance, even proportionable to their Bounds.

The Mailen or Ferm Room I am to speak of, I suppose to contain ninety Aikers of the like Ground, with that formerly mentioned, I divide it thus, sixty six Aikers I make Out-field, which I divide into three parts, two thirds I leave Grass, and one third I plough three years, then I plough another third part three years, and then the last third part I plough other

three years, and begins again to plough that first third part, and so continues to plough one third, and save two thirds Grass; Thus every third is ploughed three years, and lyeth six successively.

Of the other twenty four Aikers, I first take two, and I make it in a Yeard, or Orchyeard, half an Aiker thereof I Sow and Plant, with Cabbage or other Kaile, and what Roots I think fit for Use of the Family; the other Aiker and half I leave Grass, and the whole I plant with Fruit-trees, but because I assigne this Orchyeard for another Use, than allanerly for Fruit, I plant the Trees at the matter of thirty foot distance: The Trees being planted at this distance, hindereth nothing the growth of Grass or Herbs beside them, and within ten or twelve years, much Benefit maybe also made of themselves.

The

The twenty two Aikers that remain, I divide into five parts, which is near four Aikers and a half each part: To make the shares equal, I take half an Aiker off the Our-field. Thus I have eighteen Aikers of Croftland sowen, & four and an half Grass each year, so I dung four Aikers and a half the first year, and thereon I sow Barly, the next year I sow it with Wheat, the third year with Pease or Oats, the fourth year with Oats or Pease, the fifth year I leave it Grass, or if I thing fit I Fallow it the fifth year, by this Method, only four Aikers and a half is to be dunged every year, for which there is dung abundance, because a far greater number of Cattle can be keeped on this Mailen, than that above mentioned, (because I have more than three times as much Grass, for tho there be not three times as many Aikers, yet in respect it is much better Soard-

ed

ed by lying six years, whereas the other lay but two, it will be no worse than what is said.) And as I observed formerly, six or seven Aikers of the other Mailen used to be dunged every year, tis certain this four aikers and a half, hath farr greater allowance.

Let us next see what product may be reasonably expected off this Mailen. I suppose it will not be denyed (by any who know *Husbandrie*) but each Aiker of Croft may produce eight or ten Bolls at a Cropt considering how strongly it is dunged: However, I shall reckon but only seven, and the Out-field *I* suppose may be reckoned to bear four Bolls *per* Aiker. For seeing in the above writen instance, three Bolls was the product of one Aiker after two years lying; And this lying six years, cannot but be much more Refreshed, for tho the com-

common way of ſupplying the Defect of the Salt Quality that is in the Earth, be by applying Dung or Lyme: Yet there is alſo much of this Quality in Dew and Rain, and when the Ground is not tiled or opened up, Graſs or other things the Earth produceuh of it ſelf, doth not extract forth ſo much of this hot Quality by far, as Seeds do when it is Manured; Therefore *I* think one Boll *per* Aiker, may be very reaſonably expected more off Ground that has had ſix years reſt, than that which has had two. The product then of twenty two Aikers, *I* ſhall reckon four ſcore and eight Bolls, and ſeven times eighteen, the product of the Croft-land is ſix ſcore and ſix Bolls, which in all make two hundered & fourteen Bolls; A fourth part of the Croft being ſowen with Wheat, we may reckon on 24 Bolls of that Grain (beſide its own Seed) which is at leaſt a Crown per

better

Boll better, than other Grain; Add this to five times two hundered and fourteen pounds, the Value of the whole Grain upon the ſaid Mailen, the *Quota* is eleven hundered and fourty two pounds.

Next let us conſider what Stock of Cattle may be maintained upon this Mailen or Ferm Room: You hear'd, four Horſes, and ten or twelve Nolt, were keeped upon that above mentioned, and three times as much Graſs is upon this: Yet, I ſhall not ſo much endeavour to augment the number, as ſtrive to have the Cattle in a good Condition; For, as I formerly remarked, generally throughout this Kingdom, the Cattle are almoſt half ſtarved, which keeps them both ſmall and lean. Let us therefore keep on this Mailen, but two Horſes, four Oxen, and eight or ten Milk Kyne, and a Bull: Six Calves we may reck-

on

on to be brought up by them ever year, one half Male, the other Female: Our Stock of young Cattle, according to this Calculation, doth consist of six Calves, six of a year old, and six of two years old, which according to the Vulgar way of reckoning *Soumes*, may be counted eight *Soumes*: And when they come to be three years old, they come in the account of Kyne or Oxen; The two Horses, according to the Vulgar account, are reckoned four *Soumes*, and every Cow or Oxen one, so the whole *Soumes* above mentioned, are twenty seven. The Aikers of Grass in this Mailen are fourty eight, beside that of the Orchyeard (which I reserve for Hay to give the Cattle when sick, or Sheep in a Storm) besides the above said twenty seven *Soumes*, I may keep on this Grass, fourty or fifty Sheep.

Let

Let us now reckon what Benefit may be made of thir Cattle; And firſt, of the ten Milk Kyne, may be made ſixteen or twenty Stone of Butter, ſixteen Stone at a Dollar *per* ſtone, is odds of fourty ſix pounds in Money, three Oxen and three Kyne, *I* have to ſell or diſpoſe of every year, and in reſpect they will be better fed than Cattle commonly now are, (in regaird their Paſture is not overlaid) *I* may reckon them at eighteen pound the peece, four of them *I* ſell at *Hallowday* for ſeventy two Pounds, and two of the Oxen I keep and feed (having good Fooder enough) all Winter, and in *February* or *March*, I ſell them at thirty pounds the peece at leaſt, which is ſixty pounds: Upon the Horſes *I* reckon neither Profit nor loſs. Of the product of our Sheep, we may reckon twenty to be brought up every year, their Wool may be reckoned worth thirty

thirty or thirty six pounds; *I* sell or dispose of seven or eight of the weakest of them at *Hallowday*, at fourty shilling a peece, which amounts to fourteen or sixteen pounds, twelve of the best of them I put into the Orchyeard, and lets them feed there till after *Candlemas*, and then I can sell them at four or five pounds a peece at least, which is fifty or sixty pounds.

Beside all this, I can have in my Orchyeard, four or five Bee Hives, which may be keeped at little or no Expence, whereof I may make twenty four pounds *per Annum*, and the half Aiker of Orchyeard I have in Herbs and Roots, shall save a Dozen or sixteen Bolls of Grain; Howeyer, *I* do only reckon it to save fiftie pounds.

Now, Let us see what the whole

product of this Mailen or Farm Roon amounts to, in all.

Imp: of 14 Bolls grain at 5 *lib:* per Boll.	1070	00	00
The additional worth of 24 Bolls Wheat	72	00	00
3 Kyne and one Ox, at 18 *lib:* a peece.	72	00	00
2 Oxen at 30 *lib:* a peece	60	00	00
8 Sheep at 2 *lib:* a peece.	16	00	00
12 Sheep at 4 *lib:* 4 *ſhil:* a peece.	50	08	00
The profit of the Orchyeard.	50	00	00
The Wooll wirth.	86	00	00
16 ſtones Butter at 2 *lib:* 18 *ſhil:* per ſtone	46	08	00
Honey worth.	24	00	00
	1496	16	00
The product of that Mailen above mentioned, was only	733	06	08
Which being deducted from 1473 *lib:* 16 *ſh:* there remains ſtill,	763	09	04

You may remember I obſerved the Expence of Labouring and Seed of both Mailens are alike, for ſeeing I labour but fourtie Aikers of the later, the juſt number of that laboured of the former, the like number of Servants, and quantity of Seed, will ſow and labout both.

You

You ſee I have ſeven hundered and ſixty three pounds more in this than the product of the firſt Mailen, and I have only a hundered pounds more Rent to pay, conform to the proportion of Ground *I* have more in this laſt; But becauſe the Landlord gives me *Encouragement* at my firſt Stocking of this Ground, in truſting me for ſeveral years a part of his Rent, becauſe at firſt, the Ground cannot be brought to a good Condition, and becauſe *I* get a Tack or Leaſe ſome conſiderable time, that *I* may be thereby encourag'd to improve this *Ground*; therefore *I* ſhall allow him twenty or thirty Bolls more Rent *per Annum*. Now, grant that *I* do pay 30 Bolls more than what is above reckoned on, and proportionable to the Rent of the firſt Mailen, that is one hundered and 50 pounds in Money, take this and the hundered pounds laſt mentioned, from ſeven hundered and

ſixty three pounds, five hundered and thirteen pounds have *I* ſtill more profit, than he who poſſeſſeth the firſt Mailen, managed as at preſent it is, through the greateſt part of this Kingdom.

But beſide all this, *I* offer yet to make it evident, *I* ſhall ſave ten or twelve Bolls of Grain the other doth not, which *I* do thus; You may remember ſixteen Bolls was allowed to maintain four Horſes in labouring the firſt Mailen; But in the other, *I* allow only two Horſes to be keeped, and four Oxen, they need not to be fed with Corn as Horſes are, three or four Bolls *per Annum*, is all that four Oxen will need, ſo here is four Bolls ſaved at leaſt, which is but a part of the profit had by labouring with Oxen, for as *I* have ſhewed above, ſixty pounds may be made every year of two Oxen, after they have laboured

two

two or three years, which cannot be made of Horſes, for tho ſome may make Benefit by bringing up Horſes, yet all cannot: Further, than to get Service of them while they live, for all of them muſt once die in ſome Bodys cuſtodie; And therefore, whatever any may gain, others muſt certainly loſs of them. But becauſe Oxen are not ſo good for every Service as Horſes are, I recommend a part of each, as moſt Convenient and Beneficial.

Again, I ſave ſix or ſeven Bolls of Seed, which the Poſſeſſors of the firſt Mailen doth not; And becauſe I had Occaſion ſeveral times to mention Bolls and Aikers, which are not alike in all places throughout this Kingdom, I ſhall here tell what Bolls and Aikers I mean off; the Boll is after *Lithgow* Standard, which contains near ſeven or eight Potles *Engliſh*,

or

or a galon *Scots* meaſure, this is the Stander for Oats or Barly; But that of Wheat, Peaſe, and Meal one third leſs: And the Aiker contains an hundered and ſixty Pearches or Falls, to a Fall ſix Ells, an Ell thirtie ſeven Inches, and a Quarter of an Inch; Three of our Aikers make near a Rood more than four *Engliſh* Aikers; I have reckoned all along a Boll of Grain for Seed to an Aiker of Ground which doth very near jump in all kinds of Grain, except Barly, which doth not require ſo much, But ſeeing I have reckoned both Mailens alike, what it varies in the one, it varies in the other alſo.

But to make my Aſſertion good, I ſay, let any perſon obſerve, and they will ſcarce find one ſtalk of any kind of Grain, but it will have a dozen of Grains upon it, and ſome will have no fewer than thirty or fourty, and ſcarce any under twenty, beſide ſeve-

ral ſtalks ſometimes out of one Root. By all which it would appear, the product is no leſs than twenty four Fold: And yet (in the mean time) five or ſix or ſeven Fold, is thought no deſpicable Increaſe.

This ſays not above one third of the Seed that is ſowen doth come to perfection, which I am very apt to believe: Now let us ſee what are the Cauſes why it is ſo, which (beſide the fault of the Seed) I can gueſs at none ſave two, the *Maladies* of both I ſhall in ſome meaſure remeed; The firſt is by reaſon of the roughneſs and knotyneſs of the Ground whereon the Seed is ſowen, ſome of it falling down to the bottom of the Furrows, and afterward being covered with clods and duſt, perhaps more than 5 or 6 inches thick, it is either therein chocked for want of Air, or cannot get ſprung up thorrow ſo much Earth.

More:

Moreover, even tho it be not so deep in the Earth, yet when the Seed is sowen dry, and falling into such places of the Ground as are also dry, it cannot suddenly chip or spring, and continuing partly moist and partly dry, a great dale of it consumeth before it doth sprout.

That which confirms me in this Opinion, Is, when *I* have taken notice to Malt upon the Floor, scarce one Grain of ten, yea in good Grain, scarce one of twenty, but what did fairly chip, or begin to shot forth, from which *I* conjecture, if that which is sowen on the Earth, were as much moistened, it would as universally chip: And I believe, very little Grain that once springeth above Ground, doth afterward fail, except the Season be very intemperat.

The way then to Remeed these

Mi-

Maladies, are to ſteep the Seed before it be ſowen twenty four hours at leaſt (ſome preſcrive ſteeping in *Aquavitæ* and Lyme Water) but I am for no ſuch Curioſity, fearing the Benefit will not repay the Charges; But let it only be ſteeped in Water twenty four hours, as is ſaid, and let it ly upon the floor till the watter dry from it, and if ye cannot conveniently have it inſtantly ſowen, it will be nothing the worſe to ly three or four days (providing ye let it not heat,) it cometh as faſt forward on the Barn Floor as if it were ſowen: For the *Sape* or Moiſture that remaineth in it after ſteeping, is ſufficient to make it once ſprout, & I ſuppoſe after it doth once chip or ſhut forth, it doth not eaſily afterward fail. And then to prevent its falling into hols, give the Ground a courſe of Harrowing before the Seed be thereon ſowen, and then harrow it till it be enough, Taking

product of this Mailen or Farm Roor amounts to, in all.

Imp: 214 Bolls grain at 5 *lib:* *per* Boll.	1070	00	00
The additional worth of 24 Bolls Wheat	72	00	00
3 Kyne and one Ox, at 18 *lib:* a peece.	72	00	00
2 Oxen at 30 *lib:* a peece	60	00	00
8 Sheep at 2 *lib:* a peece.	16	00	00
12 Sheep at 4 *lib:* 4 *ſhil:* a peece.	50	08	00
The profit of the Orchyeard.	50	00	00
The Wool worth.	36	00	00
16 ſtones Butter at 2 *lib:* 18 *ſhil:* *per* ſtone	46	08	00
Honey worth.	24	00	00
	1496	16	00
The product of that Mailen above mentioned, was only	733	06	08
Which being deducted from 1473 *lib:* 16 *ſ:* there remains ſtill,	763	09	04

You may remember I obſerved the Expence of Labouring and Seed of both Mailens are alike, for ſeeing I labour but fourtie Aikers of the later, the juſt number of that laboured of the former, the like number of Servants, and quantity of Seed, will ſow and labour both.

You

You ſee I have ſeven hundered and ſixty three pounds more in this than the product of the firſt Mailen, and I have only a hundered pounds more Rent to pay, conform to the proportion of Ground *I* have more in this laſt; But becauſe the Landlord gives me *Encouragement* at my firſt Stocking of this Ground, in truſting me for ſeveral years a part of his Rent, becauſe at firſt, the Ground cannot be brought to a good Condition, and becauſe *I* get a Tack or Leaſe ſome conſiderable time, that *I* may be thereby encourag'd to improve this *Ground*; therefore *I* ſhall allow him twenty or thirty Bolls more Rent *per Annum*. Now, grant that *I* do pay 30 Bolls more than what is above reckoned on, and proportionable to the Rent of the firſt Mailen, that is one hundered and 50 pounds in Money, take this and the hundered pounds laſt mentioned, from ſeven hundered and

ſixty three pounds, five hundered and thirteen pounds have *I* ſtill more profit, than he who poſſeſſeth the firſt Mailen, managed as at preſent it is, through the greateſt part of this Kingdom.

But beſide all this, *I* offer yet to make it evident, *I* ſhall ſave ten or twelve Bolls of Grain the other doth not, which *I* do thus; You may remember ſixteen Bolls was allowed to maintain four Horſes in labouring the firſt Mailen; *B*ut in the other, *I* allow only two Horſes to be keeped, and four Oxen, they need not to be fed with Corn as Horſes are, three or four Bolls *per Annum*, is all that four Oxen will need, ſo here is four Bolls ſaved at leaſt, which is but a part of the profit had by labouring with Oxen, for as *I* have ſhewed above, ſixty pounds may be made every year of two Oxen, after they have laboured

two

two or three years, which cannot be made of Horſes, for tho ſome may make Benefit by bringing up Horſes, yet all cannot: Further, than to get Service of them while they live, for all of them muſt once die in ſome Bodys cuſtodie; And therefore, whatever any may gain, others muſt certainly loſs of them. But becauſe Oxen are not ſo good for every Service as Horſes are, I recommend a part of each, as moſt Convenient and Beneficial.

Again, I ſave ſix or ſeven Bolls of Seed, which the Poſſeſſors of the firſt Mailen doth not; And becauſe I had Occaſion ſeveral times to mention Bolls and Aikers, which are not alike in all places throughout this Kingdom, I ſhall here tell what Bolls and Aikers I mean off; the Boll is after *Lithgow* Standard, which contains near ſeven or eight Potles *Engliſh*,

or

or a galon *Scots* measure, this is the Stander for Oats or Barly; But that of Wheat, Peaſe, and Meal one third leſs: And the Aiker contains an hundered and ſixty Pearches or Falls, to a Fall ſix Ells, an Ell thirtie ſeven Inches, and a Quarter of an Inch; Three of our Aikers make near a Rood more than four *Engliſh* Aikers; I have reckoned all along a Boll of Grain for Seed to an Aiker of Ground which doth very near jump in all kinds of Grain, except Barly, which doth not require ſo much, But ſeeing I have reckoned both Mailens alike, what it varies in the one, it varies in the other alſo.

But to make my Aſſertion good, I ſay, let any perſon obſerve, and they will ſcarce find one ſtalk of any kind of Grain, but it will have a dozen of Grains upon it, and ſome will have no fewer than thirty or fourty, and ſcarce any under twenty, beſide ſeve-

ral ſtalks ſometimes out of one Root. By all which it would appear, the product is no leſs than twenty four Fold: And yet (in the mean time) five or ſix or ſeven Fold, is thought no deſpicable Increaſe.

This ſays not above one third of the Seed that is ſowen doth come to perfection, which I am very apt to believe: Now let us ſee what are the Cauſes why it is ſo, which (beſide the fault of the Seed) I can gueſs at none ſave two, the *Maladies* of both I ſhall in ſome meaſure remeed; The firſt is by reaſon of the roughneſs and knotyneſs of the Ground whereon the Seed is ſowen, ſome of it falling down to the bottom of the Furrows, and afterward being covered with clods and duſt, perhaps more than 5 or 6 inches thick, it is either therein chocked for want of Air, or cannot get ſprung up thorrow ſo much Earth.

More.

Moreover, even tho it be not ſo deep in the Earth, yet when the Seed is ſowen dry, and falling into ſuch places of the Ground as are alſo dry, it cannot ſuddenly chip or ſpring, and continuing partly moiſt and partly dry, a great dale of it conſumeth before it doth ſprout.

That which confirms me in this Opinion, Is, when *I* have taken notice to Malt upon the Floor, ſcarce one Grain of ten, yea in good Grain, ſcarce one of twenty, but what did fairly chip, or begin to ſhot forth, from which *I* conjecture, if that which is ſowen on the Earth, were as much moiſtened, it would as univerſally chip: And I believe, very little Grain that once ſpringeth above Ground, doth afterward fail, except the Seaſon be very intemperat.

The way then to Remeed theſe

Mu-

Maladies, are to ſteep the Seed before it be ſowen twenty four hours at leaſt (ſome preſcrive ſteeping in *Aquavitæ* and Lyme Water) but I am for no ſuch Curioſity, fearing the Benefit will not repay the Charges; But let it only be ſteeped in Water twenty four hours, as is ſaid, and let it ly upon the floor till the watter dry from it, and if ye cannot conveniently have it inſtantly ſowen, it will be nothing the worſe to ly three or four days (providing ye let it not heat,) it cometh as faſt forward on the Barn Floor as if it were ſowen: For the *Sape* or Moiſture that remaineth in it after ſteeping, is ſufficient to make it once ſprout, & I ſuppoſe after it doth once chip or ſhut forth, it doth not radily afterward fail. And then to prevent its falling into hols, give the Ground a courſe of Harrowing before the Seed be thereon ſowen, and than harrow it till it be enough, Taking

thir Measures, I dar adventur to sow an Aiker of Land with two or three Pecks less Seed, than in following the common Manner, which is more than sevenBols saved of fourty Aikers, if three Pecks *per* aiker be rebet: But I shall only reckon six saved this way,

Before I close this Chapter, I shall answer one Objection, which some perhaps may frame against my steeping of Seed-Corn, in that *I*'m of Opinion, dry Seed sowen upon dry Ground is not sudenly moistened, and lying some considerable time half wet half dry, is consumed before it receive Life: Whereas on the contrare it's the universal Opinion of all that have any Knowledge, or Experience of *Husbandrie*, that a dry Seed time is the most seasonable of any, in so much that it's a Vulgar Proverb *A Boll of* March *Dust is worth a Boll of Gold*, but steeping of Seed seems to inferr the contrair.

To

To which I anſwer, this makes nothing againſt my aſſertion for as *I* ſhewed above, there is a moderat temperature of diverſe Qualitys required in the Earth to fit it for bringing furth Grain,& it is not ſo much the exceſs of Moiſter in Seed-time, that hindereth a plentyful Cropt, as it is the exceſs of Cold, and tho the Earth of it ſelf be Cold and Dry, yet Water is Colder, and when the ground is wet with Rain in Seed-time, it cooleth it ſo much, that much of the *Seed* conſumeth before it Chip. Another bad conſequence that followeth a wet Seed-time, is the ground being Ploughed and Harrowed wet, is in a manner knedded together like Levan, and drying afterwards hardneth together as if it were a Cake, ſo that Air hath not free acceſs to the Seed or Root of the ſtalk, and therefore cannot be ſo fruitful, as otherwayes it would be: Beſides all this a great

dale of hurtfull Weeds ſpring up which are incouraged by a Cold wet Seaſon, and geting once above the Corn before it riſe keep what advantage they get.

CHAP. IV.

The great Profit of Hedging and Incloſures,

THE preceeding Chapter having already run beyond the bounds I thought to have contained all I had to ſay on this Subject in; I ſhall endeavour all poſſible Brevity in ſpeaking to theſe Heads I have nor yet ſpoken to. You may remember at our entry it was obſerved, *That where the Earth is Fertile, there is a moderat Temperature of Heat, Cold, Moiſture, and Dryneſs, and when any one or more of theſe Qualitys prevail, or are deficient, it is ſo farr diſeaſed and rendered unfruitful. And alſo, That the Hot or*

Salt

Salt Quality, is that which is most frequently defective in our cold Climate, and tho it be strengthened, yet by Tilling and Dressing of the Ground, it is extracted forth into the Substance of Grain, &c.

That which is principally required then to bring the Ground to a Fruitful Condition, is to assist this Hot or Salt Quality, and seeing by GOD's Providence, we Inhabit this place of the Earth, which is naturally more cold than many other places thereof, in respect it lyeth more remote from the Sun's Heat, let us therefore endeavour to help by *Art*, that wherein Nature is defective.

And before we go any farther, it may be no unseasonable Meditation, to Contemplate upon the Wisdom, and Goodness of that *Infinit* Being, who has fixed the *Sun* (that most glorious Crea-

Creature) in ſuch a Sphere, that by this one body of Light the whole Univerſe is Illuminated. warmed, and Quickened: For what Creature, Animate, or Inanimate can ſubſiſt without conſtant Refreſhment from his Grateful & Comforting Rayes: Yea, doth not all the other Luminaries borrow their Light & Glory off him? What Finit Capacity could ever have contrived, where to place one ſingle body that might give light and moderat heat to the whole Univerſe? Had the *Sun* been fixed in a lower Sphere than now he is, the *Earth* had been ſcorched or burned up, Had he been placed in a higher Sphere, than the Earth had not been warmed to ſuch a degtee, that it had been poſſible for Men thereon to live, or any thing therein to grow? Should the Sun remain but a year or two at that diſtance he is from us in Winter, no living Creature could ſubſiſt.

But

But the placeing of this Glorious Body, at ſuch a convenient diſtance, is but one part of the wonderfulneſs of the incomprehenſible Wiſdom of GOD, in relation to that Creature; For had not the Sun moved, let him be fixed in what place ſoever, one third part of the Earth had not received the Benefit of his warm Beams. Had his Annual motion (that is his Revolution thorow the Signs) been alſe quick as that of the Moon, then Corn, Herbs, Flowers, *&c.* that had begun to ſprut and grow, during the time of his welcome Viſit, ſhould have weathered and decayed upon his ſudden abandoning of them before they came to perfection. (And here, if it were not beſide our purpoſe, I might ask ſuch as make the Moon to be another inhabited Tereſtial Glob. what time Corn takes to grow up and ripen there; For more ſpace than a moneth can they not have, for Summer, Win-

Winter, Autumn, and Spring; Or else they must call every moneth but one day, And so I leave them to calculat their year themselves.) Or, had the *Sun*'s motion been alse slow as *Saturn*'s, or other of the Superior Planets, then these places receiving his visit had been scorched by his long continuance in one place, and other places continuing long in extream cold during his absence, could not but frize before his return: For it is beyond Contraversie, if the *Sun* did continue any considerable time in one place, things about him would be much more warmed than they are by his transient Visit. As for Instance, Let a person take a Shovel full of fire, and carry round about all the borders of a Room, every particular place will not be so much warmed thereby, as one place is, when it doth remain any considerable space there; Much on this Subject might be

be ſaid, which ſurpaſſeth the Eloquence of the ableſt Oratour, or Pen of beſt accompliſhed Clark; Wherefore I ſhall return to what I was ſpeaking of before.

You ſee Heat is one principal cauſe of growth of Grain, and other things the Earth bringeth forth; And ſeing Providence has aloted us to live in this cold Climate, we muſt (by Art) endeavour to help that wherein *Nature* is defective, as is ſaid. Which is done two wayes, *viz:* Firſt, by reſtraining exrernal Cold, and next, by ſtrenthening or aſſiſting the internal Heat that is in the Earth.

The way to reſtrain external Cold, is in a ſpecial manner, by Planting and Hedging, of which I ſhall ſpeak more particularly, when I come to treat of Planting; But in the mean time, that I may confirm my Aſſerti-

on, that reſtraining of external cold, is no ſmall Encouragement to growth of Corn and Graſs, &c: Beſides the Reaſons given for it in the firſt Chapter, I ſhall tell what (from Experience) I have ſeen, and what any perſon to their conviction may readily obſerve; in any place where the Earth is ſheltered from the violence of Storm: As for Inſtance, what Orchyeard, Gairden, &c: being incloſed, under the ſhelter of Trees, or any thing elſe that defends them from Wind and Storm; But it is more Fertile than other Ground equal with it in every Circumſtance, this only excepted? Again, I have ſeen where the Wind had paſſage but only through the gape of a Hedge or Stone-wall, the Ground there in the ſame very bit, and no where elſe near it, has been viſibly a great dale more barren than the reſt of the ſame Land. And on the other hand, where there has been a Buſh, or any other inſig-

ni-

nificant ſhelter (tho the reſt of the Ground about it has been barren) Graſs or any other thing growing under the lie of it, has been tollerable good and rank. Inſtances to confirm this were infinit, wherefore I muſt conclude, to reſtrain external Cold, muſt be no ſmall Encouragement for growth of Corn and Graſs, &c.

Having ſpoken of manuring, or dunging the Ground in Chapter ſecond, and given a hint of what kind of Dung or Manure was fit for every ſeveral kind of Ground; I ſhall not now reſume what was there ſaid, only I would recommend this as an Univerſal Rule, to apply that kind of Manure to every kind of Earth, that has moſt of the Quality in it, that the Ground whereon it is laid has leaſt of, *viz:* hot Manure on cold Ground, and cold Manure on Hot Ground; But leaſt ſome may be igno-

rant what kind of Dung or Manure is Hot, or what is Cold, know, Cow or Ox Dung is the coldeſt of any I know, and Horſes Dung is more hot, but Sheep Dung is hoter than either; Lyme, Aſhes, and Pigions Dung, are alſo very hot, either of them may be applyed alone, or mixed, as I ſhall afterward ſhow. But becauſe I ſpoke of Marle, and perhaps every one knows not what it is, nor how to find it, take Mr. *Markem*'s Definition of it, in his own Words.

Marle, you ſhall underſtand, is (according to the Definition of Mr. *Bernard Pulliſly*) a natural and yet an excellent Sorb, being an enemy to all the Weeds that ſpring up of themſelves, and giving a generative Vertue to all Seeds that are ſowen upon the Ground: Or (for the plain Husband Man's Underſtanding, it is a certain rich Stuff, and rough Clay,

of

of a glewie Subſtance, and not Fat or Oylie, as ſome ſuppoſe, this Marle is cold in Quality, and not Hot, as ſome would have it) and it was Earth before it came to be Marle, and being made Marle, yet it is but a Clay Ground, all Chalk whatſoever, was Marle before it was Chalk; And all manner of Stones which are ſubject unto Calcination or burning, as Lyme-ſtone, Flint, and the like, were firſt Marle before they were ſtones, & only hardened by accident, and ſo not poſſible to be diſolved, but by fire: As for Marle it ſelf, when it is a little hardened, is only diſolved by Froſt, and nothing elſe: And thence the Cauſe is, that Marle ever worketh better Effect the ſecond year than the firſt.

This Marle hath been made ſo precious by ſome Writers, that it has been accounted a fifth Element, but

of

of this Curioſity I will not now diſpute.

Touching the Complexions and Collours of Marle, there is ſome difference, for tho all conclude there are four ſeveral Collours in Marle; Yet one ſayeth there is a White, a Gray or Ruſſet, a Black and Yellow; Another ſayeth there is a Red and White mixed like unto Porphery. And all theſe may well be reconceilled, and Collours may alter according to the Climate and Strength of the Sun, ſo that by theſe Characters, the Collour, the Roughneſs, and the Looſneſs, when it is dryed, any Man of Judgement may know Marle from any other Earth whatſoever: This Marle is ſo Rich of it ſelf, and ſo Excellent for Continuance, that it will Maintain and Inrich barren Ground, the worſt, ten or twelve, and ſome for thirty years.

This

This Marle is commonly found in the loweſt parts of High Countreys, near Laiks and ſmall Brooks, and in the high patt of low Countreys, upon Knowls or ſmall Hills, or within the Clifts of high *Mountainous Banks*, which bound great Rivers in. To conclude, You will ſeldom find barren Sandy Grounds, but what are verged about with Marle, ſometimes it is found within two or three foot to the Surface of the Earrh, and ſometimes ten or twelve: It is worth the ſearching after, and boring of ſuſpected places for it, may be worth your pains.

Having given you this ſhort hint of *Markem*'s Opinion of Marle, and how to know it; I ſhall proceed to what I propoſed, *To wit*, To give ſome Directions how to make ſome further Improvement of the Ground, than what I have ſhowen in the preceeding Chapter.

Chapter. And as I ſaid, ſeeing Nature hath caſten our Lot in this cold Climate, we muſt by Art endeavour to ſupply that want the beſt way we can, which beſide the warding off Storm and Winds, applying all or any of the forementioned kinds of Manure, doth alſo warm or heat the Earth ſo, that it doth bring forth Grain, &c. without any Fence at all. But know, where there is no Fence or Shelter from Storm, the Earth doth require a greater Quantity of Dung to keep it warm; And to make this the more plain, I ſhall illuſtrate it by this familiar Similitude. You know when a Man is going abroad on a cold day, the common way to defend himſelf from Cold, is to put a Cloak or other Veſtment upon him; Yet, by taking a Draham of Brandy or Strong Waters, and walking ſharply, he may alſo keep himſelf warm. So I ſay, where the Earth is not defended from

Wind

Wind and Storms, it muſt have the more Manure laid upon it; And conſequently, where the Earth is defended from Storms, the leſs Dung will ſerve. And ſeeing Manure cannot be had to every peece of Earth, theſe Fields that are fenced, will not require ſo much, and ſo what can be had will ſerve the more; Wherefore, if in the Inſtance forementioned, four Aikers and a half was dunged every year, by the dung of the Cattle that were mantained, upon the Mailen of ninety Aikers, then I ſuppoſe one Aiker more, the ſelf ſame quantity of Dung, may manure every year, where the Ground is hedged or fenced.

Now if one Aiker more can be Manured, or (as it's commonly termed) Mucked every year, and the Manure leſting four years, as is ſhewed above, than four Aikers more Corn

may be had every year in a Mailen of the above mentioned bounds; Which being reckoned at ſeven Bolls *per* Aiker, as the reſt of the Aikers of the ſaid Mailen were reckoned at, maketh twenty eight Bolls more than was on the ſaid Mailen not incloſed: But ſeeing four Aikers of that which formerly lay Graſs is now made Corn, perhaps it may be ſaid the Profit is inconſiderable, in reſpect four Aikers of Graſs are deduced, for the ſaid twenty eight Bolls of Corn. To which I ſay, notwithſtanding four Aikers of Graſs are taken off the Paſture, yet ſeing the whole or greateſt part of the Ground is incloſed, and there was in all fourty eight Aikers of Graſs, there remains ſtill 44 Aikers of Graſs, which according to the Parity of Reaſon, ſeeing the Ground is warmed by hedging, ſo that one fourth or fifth part of the Dung can be ſaved off Corn-Land, and

and the Crop be alſe good as when it had the whole alowance; than I may reckon the Graſs alſo one fourth or fifth part better then it was before the Ground was Hedged.

Therefore I have not only as much Graſs as I had formetly, when theſe four Aikers were not taken off the Paſture (and the Ground not incloſed) but even tho ten Aikers were taken off, the remaining thirty eight Aikers incloſed, are better than the whole fourty eight lying open without fence. And beſide the twenty eight Bolls had more on the Croft-land, I ſuppoſe the Out-field being incloſed alſo, may yield a Boll *per* Aiker more than it did before: Howeverr, reckoning it only half a Boll, it is eleven Bolls in all, which added to twenty eight, makes thirty nine, which in all makes an hundered and ninety five pounds in Money, at five pounds

per Boll, ſo much more is the Product of this Mailen, than what it was before reckoned at.

The yearly Expence is no more than what we formerly reckoned, except the Seed and Labouring of this additional four Aikers taken off the Out-field; For which I ſhall deduce 12 pounds *per* Aiker, being in all fourty eight. Take fourty eight pounds from an hundered and ninety five, there remains an hundered and fourty ſeven pounds. And in reſpect the *Paſture* is as much improven by Hedging, as the Corn-land is; A greater number of Cattle may be thereon maintained; And conſequently, more Dung will there be made, which will ſerve to Manure more Ground, than all that is yet made into Croft.

Beſides all this, ſeing more Cattle can be kept upon this Mailen when in-

incloſed, more Profit on them may be alſo expected. but I ſhall paſs that, and advance yet to another ſtep of improving this ſaid Mailen, which I do two wayes, Firſt by Fallowing, and next by ſeeking out all the Manure I can poſſibly get, beſide the dung of Cattle, and all rubbiſh made of the Product of the Ground it ſelf.

As to the Fallowing, I ſay it was marked at the entry of our diviſion of this Mailen into Croſt and Out-field, that the Out-field was divided into three parts, one third alwayes to be in Corn, and two in Graſs; If the Ground ly conveniently, I can ſub-divide each third part into three parts, and plough ſix or ſeven Aikers of the Out-field Graſs every year; But if that cannot be conveniently done, I let it all ly till the third year, and then I fallow ſix or eight Aikers of it, ſometime in the Winter pre-

ceed-

ceeding the year I resolve to sow it, and then about the beginning of *May*, or latter end of *April*, I plough it over again, and lets it take the drought for a moneth or more, then I harrow it, and lets it ly a Week or two, and then I plough it again, and lets it ly as before, and when the Mould is again dryed, I harrow it again. The advantage of this kind of Labour, is more than can be well credited, by those who know not something of it in Experience.

But that I may not desire any to credit my bare Assertion, these Reasons I shall offer to confirm it. First, By this frequent Tieling and Harrowing of the Ground, it is made mellow and tender. Next, All Weeds, Grass, and other things that may extract the strength out of the Earth, is quite consumed (and be the by, I know no bet-

better way to cleange any Ground that is overgrown with Goole) But the chief benefit it hereby receives, is thorow the warmneſs of the Sun beams: And Dew and Rain falling upon the Earth, no kind of Herb or Grain being to interupt it, the Salt Quality that is therein remaineth ſtill: As alſo, the warmneſs it has received by influence of the Sun, for being throughly dryed in the Summer, it doth continue much warmer than otherwayes it would be.

But if none of theſe Reaſons may be convinceing for my laſt Proof (like the *Catholicks* who flee to the Teſtimony of the Church, when other Proofs faile) I leave it to be determined by theſe who have tryed the Experiment, and to any who ever ſaw a Fold-dyke made of the very next adjacent Earth, that after being dryed one Summer, and again thrown down

down to its own place, whither that Ground has not afterward been more fertile than the reſt about it, that was not ſo diged up, and dryed.

In the next place, as I ſaid, I uſe all diligence for making what Manure I can, for beſide the dung of Cattle, which I preſerve with great Care, in bordering my Dung-hill ſo about with a wall of Earth, that no Sapp can run from it, and not only ſo, but takes care that none of the Piſs of Cattle run away, and if there be not as much off-fallings of Straw or Litter about them, as may retain it, I take care that it be keeped in a Trough or deep hole, at the Lower-end of the Cow-houſe or Stable, and cauſes it to be carry'd thence to the Dung-hill, and pour it out there, for doubtleſs there is as much ſtrength or pith in Piſs, as in Dung.

Again

Again, if there be any Marle, or Sea-ware in the Ground, or any place near by, I make it my buſineſs to get as much of it, as I can conveniently lay upon the Ground every year, till it be all gone over: But if neither of theſe can be had, I look for Lyme; Of which, with old thack of Houſes, and Clay-turff diged in ſome moſt convenient place of the ſaid Mailen, being dryed, I mix with the Lyme and old Thack, together with Dung and Straw, or any Rubbiſh I can get; I make a Dung-hill upon ſome convenient place of that Land I intend to Fallow, as I ſhewed above. This I do every Summer, or any other time when Occaſion ſerveth; And at the end of three years, the time when this ſix or eight Aikers of Out-field is fallowed, I lay this Dung-hill upon it; But if the Ground ly ſo that I can Fallow two or three Aikers every year, ſo that it

ly not in the middle of my Paſture, I lay this Manure alſo every year, on ſo much as I can.

Now, after Fallowing and Manuring, I plough it about *Michaelmas*, and thereon ſoweth either Wheat or Winter Barly; And if the Seaſon be good, ten or twelve Bolls *per* Aiker may be expected, without a Miracle. For Fallowing of it ſelf without any Manure, is able to Enrich any ordinary Ground, ſo that for three or four years, it will bear as much as if it had been dunged tollerable well; But becauſe this Ground has never before been manured, I give it both Fallowing and Manure, to bring it once to a good Condition, and then with reſting ſix, and being but tielled three years, it will continue in a good Condition for fifty or ſixty years. Yea, if it be Hedged and keeped Warm, and not ploughed oftner than what

what is ſaid, it will in all time coming continue much better than it was before.

Now, as is ſaid, taking this courſe in providing Manure extraordinar, for two or three Aikers of Out-field Land every year, within twenty or twenty four years, it is all thus brought to a good Condition, ſo that if I pleaſe, I need not from thence forth let it ly more but three or four years at a time, and plough it as long, whereby I may alwayes have eight or ten Aikers more in Corn, than what is ſhewed above: Moreover, every one of theſe Aikers may reaſonably be ſuppoſed to bring forth ſix Bolls *per Annum*, which is two Bolls more, on each Aiker of the twenty two Aikers of Out-field, allowed to be ploughed each year, than it was ſuppoſed to bear in Chapter third, which is fourty four

down to its own place, whither that Ground has not afterward been more fertile than the reſt about it, that was not ſo diged up, and dryed.

In the next place, as I ſaid, I uſe all diligence for making what Manure I can, for beſide the dung of Cattle, which I preſerve with great Care, in bordering my Dung-hill ſo about with a wall of Earth, that no Sapp can run from it, and not only ſo, but takes care that none of the Piſs of Cattle run away, and if there be not as much off-fallings of Straw or Litter about them, as may retain it, I take care that it be keeped in a Trough or deep hole, at the Lower-end of the Cow-houſe or Stable, and cauſes it to be carry'd thence to the Dung-hill, and pour it out there, for doubtleſs there is as much ſtrength or pith in Piſs, as in Dung.

Again

Again, if there be any Marle, or Sea-ware in the Ground, or any place near by, I make it my buſineſs to get as much of it, as I can conveniently lay upon the Ground every year, till it be all gone over: But if neither of theſe can be had, I look for Lyme; Of which, with old thack of Houſes, and Clay-turff diged in ſome moſt convenient place of the ſaid Mailen, being dryed, I mix with the Lyme and old Thack, together with Dung and Straw, or any Rubbiſh I can get; I make a Dung-hill upon ſome convenient place of that Land I intend to Fallow, as I ſhewed above. This I do every Summer, or any other time when Occaſion ſerveth; And at the end of three years, the time when this ſix or eight Aikers of Out-field is fallowed, I lay this Dung-hill upon it; But if the Ground ly ſo that I can Fallow two or three Aikers every year, ſo that it

ly not in the middle of my Pasture, I lay this Manure also every year, on so much as I can.

Now, after Fallowing and Manuring, I plough it about *Michaelmas*, and thereon soweth either Wheat or Winter Barly; And if the Season be good, ten or twelve Bolls *per* Aiker may be expected, without a Miracle. For Fallowing of it self without any Manure, is able to Enrich any ordinary Ground, so that for three or four years, it will bear as much as if it had been dunged tollerable well; But because this Ground has never before been manured, I give it both Fallowing and Manure, to bring it once to a good Condition, and then with resting fix, and being but tielled three years, it will continue in a good Condition for fifty or sixty years. Yea, if it be Hedged and keeped Warm, and not ploughed oftner than

what

what is ſaid, it will in all time coming continue much better than it was before.

Now, as is ſaid, taking this courſe in providing Manure extraordinar, for two or three Aikers of Out-field Land every year, within twenty or twenty four years, it is all thus brought to a good Condition, ſo that if I pleaſe, I need not from thence forth let it ly more but three or four years at a time, and plough it as long, whereby I may alwayes have eight or ten Aikers more in Corn, than what is ſhewed above: Moreover, every one of theſe Aikers may reaſonably be ſuppoſed to bring forth ſix Bolls *per Annum*, which is two Bolls more, on each Aiker of the twenty two Aikers of Out-field, allowed to be ploughed each year, than it was ſuppoſed to bear in Chapter third, which is fourty four

Bolls: And eight Aikers that formerly lay Grass, being now ploughed, and yeelding six Bolls *per* Aiker, makes fourty eight Bolls; Which added to fourty four, makes nintie two, which at the price foresaid, is worth 470 pounds, for the Expence of Seed and Labour of the additional eight Aikers now ploughed, more than what was before, I deduce one hundered pounds, and three hundered & seventy still remains.

But because Hedging the Ground, and purchasing of this extraordinar Manure, or Gooding (as it is vulgarly termed) cannot be done without some Expence; In reason therefore, it ought to be deducted out of the Product or Increase that is had of the Ground; Let us therefore enquire what that may be. And seeing we reckoned already four Aikers Croft, and eight Out field more laboured

boured each year, than was when we summed up the Account in page fourty two, and allowed twenty shillings *Sterling* for Seed and Labour of each Aiker, we must therefore now deduce all that was allowed for labouring the said twelve Aikers, and allow it in part of payment of what charge I am at in keeping more Men and Horse, than were proposed for labouring the Maiden before it was Inclosed; For since I reckon all charge of Men and Horses that labour the whole Ground, the expence of labouring this twelve Aikers also, cometh in on that account.

I shall therefore allow one Man, and other two Horses, or two more Oxen, to be keeped when this twelve Aikers are laboured, than before; two Horses (according to our first Calculation) doth require eight Bolls of Corn to maintain them, and for a Man's

Man's Meat and Wages, I shall reckon eighty or ninety pounds. There was a Boy allowed for Herding, when the Mailen was not inclosed, which will not be requir'd after it is inclosed; Yet I shall allow him to be keeped in this case, not only in Summer, but even in the Winter also, who may serve to drive the Plough; And two Men are sufficient to thresh the Corn, & dress the Garden, and do any other Labour that is to be done, beside the ploughing. Now, for this Boys Meat and Wages all Winter, (you know he's to be kept in Summer however) I reckon fourty pounds. Thir four Men, or at least three Men and a Boy, are abundance to labour this Mailen to the full; And for curing down this additional twelve Akers of Corn, let twenty four pounds be allowed. That I may let you see the whole Particulars at one Glance, I have set them down here in a formal Account. Im-

Imprimis, The remains of the Account in page 42	763	09	04
4 Aiker Croft 28 Bolls at 5 *lib:* per Boll.	140	00	00
On 22 Aiker Out-field 44 Bolls more than was reckoned at first, is	220	00	00
8 Aiker Out-field 48 Bolls at 5 *lib:* also	240	00	00
Summa	1363	09	04

The Expence that is more required in Labouring of this twelve Aikers that was Un-laboured before the Ground was Incloſed, amounts to the Summ of 254 *Pounds, as the following Particulars doth make appear.*

Imprimis, 12 Bolls Seed.	60	00	00
Eight Bolls for Horſe Meat.	40	00	00
A Man's Meat and Wages.	90	00	00
A Boys Meat and Wages.	40	00	00
For additional Shearers.	24	00	00
Summa,	254	00	00

This 254 pounds being deduced from 1363, there remains 1109.

To go through every particular, and ſhew what might be made of Cattle, now when the Ground is Inriched and *Incloſed*; And alſo, what Benefit

Benefit may be had by Sowing Seeds of *Cloever* and other Grass, *Rye* Seed, and several other wayes how the Land may be *Improven*; But what is said already, (having run beyond the intended bounds) it may be sufficient to provoke people to try the Experiment. And if this be kindly accepted off, perhaps *I* may enlarge a little further on this Subject (unless some better accomplished for this Work, do take it in hand, to whom *I* shall willingly yeeld) in the mean time, *I* shall hasten to speak to the next Head proposed. *I* foregot to reckon upon the Profit of the Orch-yeard, which may contain upwards of seventy Trees, reckon each to bear but a Peck of Fruit, which they may easily do, before they come to twelve years, which may be reckoned as many pounds; But because we allowed nothing for Lyme, in case it be to Buy, let it go for that Use.

CHAP.

CHAP. V.

Concerning Stock-keeping.

THat which will hold two, will hunger three; Is a common Proverb in every Bodies Mouth, and yet ſcarce is there any thing leſs believed, if we may take Peoples practice to be an interpretation of their Minds, for as I formerly obſerved through moſt of this Kingdom all Paſtours are overlaid, and Cattle in a manner ſtarved; That which therefore I would recommend to all Stock-keepers, or others, that keep Cattle, to keep no more, than plentifully they can maintain: I offer to make it appear, two Kine well keep'd, (and conſequently other Beaſtial) ſhall yeeld more profit than ſix, as commonly they now are keeped.

But I begin with Horſes, Thoſe that are for bringing up of Horſes, I

would advise, (if their Stock can reach it) to provide themselves in what Mares they resolve to keep for brood. Choise them of good shapes,& other good properties, then let the Horse or Stalion be the best that possibly may be had, the Brood can hardly choose but to resemble the Sire and Dame, and a Foal of a good kind requireth no greater Expence in upbringing, than that of the worst: Therefore what ever the best can be sold at, more than the worst, so much is your profit thereby.

Then let your Mare be served only once in two years, for a Mare that is giving Suck, cannot be in good condition to breed one in her Belly at the same time; And seldom will ye see a Foal brought up, upon the Dame that is with Foal: But it is much weaker than that which is brought up on her, when not with Foal, beside the Mare

her

her ſelf and the Foal in her belly, are both much more weakned, where fore if you would have the Mare, or either of the Foals to thrive, obſerve as above.

Concerning Kine, I ſhall not now inſiſt, *Becauſe* I ſpoke ſomething of them. *Chap.* 3. I again recommend this as a principle that can never be enough inculcat, keep what number ſoever your Ground can maintain ſufficiently, and no more: Yea let there be rather three wanting of your number of Cattle, then half a *ſoume* keep more upon your Graſs, than enough.

What is that which makes Cattle in other places, to be more tall and ſtrong, then commonly they are through this Kingdom? *But* becauſe

they are fed more plentifully, and especially when they are young to feed well, is a great mean of strengthening Cattle.

Therefore if you would have your Stock to thrive, spare not to give your Calves Milk abundance when they are young; Whether you feed them with Milk, or let them suck the Dame, no great matter, they may be well enough either of the wayes, providing you spare not Milk: Or if you please to save some of their Milk, then you must supply their Dyet with Broath mixed with the Milk you give them, for Kine that will not give their Milk but to their own Calves, or at least when they are present; I doubt not but they may easily be brought, to give it as kindly, when their Calves are absent, as when present: Providing you use them not to that base Cu-

tome,

tome. When any Cow ſeems to be fond upon her Calf, let it not ſuck her at all, and tho ſhe kick or make ſtir at firſt when you begin to milk her, yet by tying of her feet, or uſeing other means to reſtrain her from hindering you to milk her, after a ſhort time, ſhe will give her milk peaceably.

The next thing I ſhall ſpeak off, is concerning making of *Butter* and *Cheeſe*: And to ſay no worſe of it, Our Women generally throughout this Kingdom, kyth as little dexterity in this, as in any point of Huſwife Operations I know; ſomething of the Cauſes thereof, I ſhall afterwards note.

Tho I can ſay nothing to this point abſolutely, as having tryed the Experiment, and found the Effect anſwerable to my Expectations; Yet I

have diſcourſed with ſuch as have proven their Knowledge therein in effect, and the Reaſons they gave for taking ſuch meaſures in ordering of their Milk, (as in the following Lines) to me ſeem ſo plauſible, that I doubt not, but we may have as good Butter and Cheeſe in this Kingdom, by following the like meaſures, as readily is to be had any where.

But take the account as followeth, in making of Butter: Take what Milk you have of your kine at one Mail, and put it in a Churn or other Veſſel by it ſelf after it is well ſtrained, let it ſtand in ſome cold place twenty four hours, or thereabout; If you have as much of it as filleth your Churn, then may you churn it, but if you have not ſo much as fill your Churn, you may keep it till you get another Mail, or two more to put with it, but by no means mix any of the

the other Milk with it, until you be juſt going to churn it, for when hot Milk is poured into that which has ſtood ſome time, maketh it to curdle (or as it is commonly termed) *ſheet*, the Cream with ſome of the groſſeſt ſubſtance of the Milk, gathering to the top, it beginneth to ſour, and never afterward can Butter be made thereof, ſo good as when it is taken in due Seaſon: *To wit*, When at firſt it beginneth to thicken or *lapper*, For then the Milk hath a very delicious Taſte: And on the contrar, when Milk is long gathered, beſide the *ſheering*, or curdling above mentioned, the Taſte altereth much and becomes unpleaſant, (to ſpeak nothing of wholſomeneſs in reſpect I am no competent Judge therein) and in reaſon, Good Butter cannot be expected of Milk that is ſpoiled.

If it be here anſwered by any, there

there is a neceſſity for gathering of their Milk ſome conſiderable time, becauſe all the Quantitie they have at a Mail or two, will not fill their Churn. To which I reply, let them proportion their Churn to their Milk for any quantity whatſoever above a Chopin, may be churned, and if it be leſs, I think it not worth your pains. But I paſs this, and I ſhall next give you account of the beſt Information, I have concerning making of Cheeſe.

That which is generally imputed to be the Cauſe, why Cheeſe is not univerſally good in this Kingdom, is becauſe the Cream is gathered off the Milk, before the Cheeſe be thereof made, & indeed in no place where this cuſtom is followed, can the Cheeſe be good: For as the Proverb is, *You cannot ſell the Cow, and ſupp the Milk.* Butter and Cheeſe of the ſame Milk cannot be reaſonably expected

expected, without as much loss on the one, as there is Benefit by the other. That which I suppose may be one chief Cause, why Women take this Method, is because they think little less Butter have they off the Cream, than if they did churn all the Milk together. I cannot positively say which way is most beneficial, but well I wot, Cheese made when the Milk is new and not skum'd, is farr better than that which is made of Milk that is skum'd, and I suppose it is also more Beneficial. And I am also sure (let them take what Method they please in ordering of their Milk) that a greater quantity of it can be had of two Kyne well fed, than of three; Yea, I may say six that are not well fed, which is the chief thing I insist on.

What the particular quantity of Butter or Cheese that commonly is

made of each *Milk-cow*, I cannot positively declare (but as I remember) when I was in *Ireland*, I have heard some say, that these who kept *Derries*, commonly make a Firkin of Butter of each Cow (which is about fourty pounds of our weight) beside a Calf brought up on every two Kyne each year: And these that make Cheese, double the quantity.

I need not here trouble my Reader, in telling the necessity of kepping clean Vessel, and careful straining of the Milk, it being a thing known to any body of Common Sense. The special thing required in making of Cheese, is to take the Milk when it is fresh and new, and thicken it without taking off any of the Cream; And be sure the Thickening or *Tearning* (as it is termed) be also fresh and good, there is little other difficulty in making of good Cheese.

Now

Now we come to ſpeak of Sheep, the univerſal Uſefulneſs of this Animal, is ſo well known, that it is altogether needleſs, to ſpeak to its Commendation, for as it is (I think, I may ſay without exception) the moſt uſeful Animal in the whole Univerſe; So are Sheep the moſt beneficial kind of Stock, bringing moſt Profit to the Owner, for not only do they multiply faſter than other Cattle, in coming near to their full Stature in a years time, but alſo the fleſh of them are as wholeſome and delicious Food, as perhaps any other whatſoever. But eſpecially, beſide all that is yet ſaid, every year they yeeld their Fleeces, which is in ſome reſpect the moſt conſiderable of all, for without them we might be ſupplyed in Food, but in Cloathing, *I* know not how Men can be otherwayes provided.

But that you may the more parti-

cularly ſee what Profit can be made of them, I ſhall ſuppoſe a Farmer to poſſeſs a Room or Mailen of a certain Bounds, and as we did that Mailen of Dale Ground, firſt enquire into the preſent Profit commonly made that way; And next, what Profit may be made by taking another courſe, ſo ſhall I now do in this Caſe. We need not be inquiſitive into the Exact Bounds, nor Rent of the ſaid Mailen, that being ſuppoſed to be alike in both Caſes. All that we make more by following this new Method, than what was made formerly, is free profit, providing the charge of Servants and other Expence, be alike.

Now, I ſuppoſe a Mailen to contain a mile of Ground Square, which is about 800 Aikers, where the Ground lyeth level; But becauſe the moſt of Sheep Paſture is Hilly and Mountainous, (the ſame Circumfer-

ence

ence can contain more) I may ſuppoſe it therefore to contain a thouſand Akers at leaſt, on which we ſhall reckon 4000 or 4500 Sheep may be keeped.

Now I ſhall ſuppoſe on this Mailen above mentioned, there is keeped 4000 Sheep, and 40 or 50 Kyne; the Profit of the Kyne *I* ſhall not now ſpeak of, having ſpoken concerning that kind of Cattle already. Of this 4000 Sheep, *I* ſuppoſe 2000 Ewes, Reckoning theſe of a year old into the number; Of theſe 2000 Ewes, *I* ſuppoſe ſixteen or ſeventeen hunderd Lambs to be produced every year, one half Male, and the other Female; Two hundered of which *I* ſuppoſe he may ſell in Lambs, at 12 Shilling a peece, which is 120 pounds; An 100 or a 150 *I* ſuppoſe may die in Gelding, and otherwayes while they are young; One thouſand four hundered

I ſuppoſe to remain till *Hallowday*, but becauſe in many places, not only are the Lambs (as well as old Sheep) fed on bare Paſture, but alſo in many places, the Lambs are wained perhaps before they be a moneth or ſix Weeks old, whereby they are keeped in a lean Condition; And Winter approaching, the natural growth of Graſs failing, and no other Paſture ordinarly is provided for them in Winter, but that whereon they fed in Summer. Any perſon may judge how they can ſubſiſt, eſpecially in great Storms of Froſt and Snow, when for a moneth together perhaps, the whole Fields and Hills whereon they were wont to feed, are totaly covered; It is rare to ſee a Stock of Sheep keeped after this manner, but one ſixth part of them dieth every Winter: But I ſhall ſuppoſe only of this Stock, four hundered to be loſt that way, which is ſcarce one tenth part. But before

before Winter, I ſhall allow a 1000 of the ſaid Sheep to be ſold at half a Crown, or three Shillings *Starling* a peece. Now, ſuppoſe a 1000 Sheep to be ſold at one pound 16 ſhilling a peece, is 1800 pounds, the Woole of all the 4000 Sheep, and 1400 Lambs, I ſuppoſe may be reckoned at one pound a peece, which cannot be valued above ſix pounds the Stone, good and bad over head, this in all maketh 345 Stones, which in Money extends to the Summ of 2070 pounds; This with the 1800 he got for his thouſand Sheep, and the 120 received for his Lambs, makes in all 3990 pounds. For any other Increaſe had on this Room, *viz.* What profit is made of his other Cattle, and the Milk of his Sheep, for Brevitys ſake, I ſhall paſs without enquiring into, and for theſe ſhall allow a greater Summ than reaſonably they can be reckoned to. The Expence of Ser-

vants

vants keeping, and Butter and Tare for his Sheep, I ſhall not reckon upon. But foregainſt that Account, I ſhall lay the Expence of keeping Servants for attending on the Cattle only, to be kept upon this Mailen, as I would have it Stocked (which certainly muſt be leſs, becauſe the Cattle, according to my way of Stocking are fewer) what Servants are keeped for labouring the Ground, ſhall have Wages allowed them, off the product of their own handy labour.

I ſhall now proceed to ſhow how I would have this Room ſtocked, and improven, For the four thouſand Sheep keeped thereon, I demand no more but only two thouſand five hundred to be keeped, their increaſe I ſhall reckon proportionable to theſe formerly mentioned: Seventeen hundred was reckoned to be the Product of four thouſand, and ſeeing

ing their last has a third more pasture it cannot be doubted but they may be in a better condition, & consequently may be more fruitful: However, as is said, I shall reckon their Increase only proportionable to these above mentioned, *viz:* 1062, for according to the Rule of Proportian, if 4000 yeeld 1700, 2500 yeeldeth 1062, the 62 I discount for Lambs that die while young; For all of the said 2500 Sheep, and 1000 Lambs, I would have Hutts builded, and make them so large, that they may have sufficient Room to ly at ease, and have room to breath, for too much heat may do them hurt; Wherefore little holes or windows in the Walls, will be very convenient, if it were not to preserve them from Rain: And for the benefite of their dung, they needed not to be put in any house at all, but their dung (as I shall instantly take notice of) is almost as material

a peece of benefite as any one profite had by them.

Next I would have about two hundred Aikers of the ſaid Paſture incloſed, and not ſuffer a beaſt thereon to ſet its foot, till after *Hallowday*; Then I make about ſome thirty Aikers in Meadow: And becauſe ſome may object that this will be the moſt difficult Task of all, becauſe of the natural barrenneſs of the Ground; I ſhall anſwer to this by and by: But firſt I would have an hundred and twenty Aikers more laid by for Croft, and this may ſeem another Myſtery: But I ſay again if it be not ſo mountainous, that it cannot be plewed, it may be made very fertile.

Six or ſeven ſcore Aikers I appoint for Croft, but if it cannot be plewed at all, I gather the dung nevertheleſs, and therewith manure the Graſs: But

I ſuppoſe an hundred Aikers or two of the bounds foreſaid to be arable, which may be ordered after this ſort.

The Sheep you heard, are to be put in Coats every Night in Winter, and even in Summer alſo, if they be nor put in folds, thir Sheep being well bedded or litter'd (for that muſt by no means be neglected) every one of them including Lambs, will make a Cart load of dung each year, which I value at *fourteen* ſhilling each Cart load, as you ſhall afterward hear. This three thouſand five hundred Carts of dung; will ſufficiently dung thirty five Aikers, at five ſcore Cart load *per* Aiker. But becauſe this Ground is naturally cold, I ſhall allow ſix ſcore to each Aiker, which is no worſe than nine ſcore common dung, the whole dung according to this Reckoning, ſerveth thirty Aikers, the ſtrength of which will re-

main good four years: So by this Sheep dung, ſix ſcore Aikers is keeped in Manure, each Aiker of which I doubt nothing off, but it may bear ten Bolls *per annum*: But that I may remove all ground of Objections againſt the fertility of this ſix ſcore Aikers of Croft or Corn Land, let the dung of the reſt of the Cattle, *To wit.* A dozen Horſes, or Oxen that perform the Labour, and forty or fifty Nolt, be added to the ſaid Sheep dung abovementioned, I am ſure no better dunged ground can be required, neither for all this ſhall I reckon the Product of each Aiker above 7 *B*olls, ſeven times ſix ſcore is eight hundred and fourty Bolls, leſs than an hundred Bolls will ſerve for ſeed, obſerving the Rules given *Chap*: 3. And fourty eight Bolls for Horſe Meat, according to that Calculation. Six men are keeped to labour this Ground, beſide what are

nceed:d

needed for other Uſes) whoſe Maintainance I ſhall not reckon) laying that aſide, foregainſt the Servants that were required to wait upon the Cattle, when this Mailen was managed as above, an hundred Bolls will therefore be ſufficient for both Meat and Wages to theſe ſix Men, An hundred Bolls for ſeed, fourty eight for Horſes, and this hundred makes in all two hundred and fourty eight, which being deduced from 840 Bolls, five hundred and ninty two ſtill remain, which being reckoned at five pound *per Boll*, is two thouſand nine hundred 60 pounds, But becauſe nothing is yet allowed for ſheering and reaping this Corn, let two hundred pound go to defray that Charge.

Thirty Aikers, as *I* formerly ſaid, *I* would have made in Meadow or Hay, for preſerving the Sheep in a

Storm

Storm, and not to go through every particular, and ſhow how much Hay may be made on each Aiker, and how many Sheep may eat a Stone or Load of Hay at a Meal; I ſay, not to trouble my Reader in ſurveying every particular, I ſuppoſe it will not be queſtioned, but this quantity of Hay may ſerve this Stock of Sheep, in caſes of extream neceſſity, when their Paſture are covered with Snow, or if they be in a great ſtrait, they may be ſupplyed with Corn-ſheaves. The way I make this Meadow, or Park (if there be none natural upon the Ground) is by ſowing ſeveral Aikers of the Corn-ground with *Cloaver*, or Graſs-ſeed, when it has born ſeveral Crops after its dunging, & ready to be dunged again, ſow it with *Cloaver*, as is ſaid, after the Corn is thereon ſowen, and the Land made as ſmoth as poſſible. I ſay, about eight days after the Corn is ſowen, ſow

ſow this Seed upon the Ground, and fill your Harrow with Thorns, ſo that the Teeth thereof go not into the Ground, leaſt thereby the Mould be raiſed too high above the Graſs-ſeed; The Thorns being well tyed into the Harrow, it ſmootheth a thin Mould over the Seed: So that year you have your Crop of Corn, as if nothing elſe were upon the Ground. And next year, the *Cloaver* and Graſs grow up plentifully, ſo that two or three times it may be cut down or moven; Thus are your Hay Parks made.

But if your Ground be ſo Mountainous, that it cannot be ploughed, nevertheleſs it may be made Hay, either by laying Dung upon the Graſs, or by folding your Sheep or other Cattle, on the place you intend to make in Hay: And after it is pudled and dunged by the feet and dung of

your

your Beastial, sow it with the said Seeds, and Harrow it as above.

Let this Hay be given to your Sheep in time of Storme, as is said; But first provide Racks to lay it in, for if you throw it down among their feet, they will loss a great part of it, by trampling it amongst their Dung; Some place their Racks in the middle of their Sheep Coats. But this I do not commend, for if the Rack be placed so low, that the Sheep can conveniently eat out thereof, then the Woole is torn off their backs, by going through beneath it; To have them placed upon the Wall, I judge more convenient.

The 200 Aikers that was appointed to be hained all Summer, let your Sheep be put on it in *November*, or as soon as your other pasture grows bare. By this prudent providing for

Food

Food to your Sheep in Winter, I doubt not but it may granted, that Sheep keeped after this manner, will be much ſtronger and more healthie, than thoſe keeped as was formerly ſuppoſed; And conſequently, their Lambs cannot but be fatter and larger, for how can it be ſuppoſed, that a Ewe lying among Froſt and Snow all Winter at the point of ſtarving can in the Spring bring forth a Lamb in a good Condition? Therefore we may reckon Lambs of Sheep, keeped after this latter manner, one third better than thoſe keeped as above.

I queſtion nothing but their Wool may be as much improven as themſelves; My reaſon for it is this, when other Beaſts are fat and in a good Condition, their Hair is viſibly much ſofter and ſmoother; Look but to any Horſe that is well fed and keeped, and to a labouring Horſe that is ſore

wrought and ill fed, and you will ſee what difference is betwixt them, and ſo of all other Beaſts. And ſeeing Wool is the Hair that groweth on this Animal, Why ſhould it not Improve as much as that of others? I doubt nothing, if Sheep were fed as plentifully in this Countrey (as eaſily they may be, as is ſhewed above) but their Wool may be made as good, as readily is had any where elſe.

Now let us ſee what may be yearly made of thoſe 2500 Sheep, you know 1000 Lambs was ſuppoſed to be had of them every year, beſide thoſe dying young; A 100 let be ſold in *April* or *May*, at 18 Shilling a peece, which is 90 pound; Four hunder of the oldeſt and weakeſt, let be ſold at *Hallowday*, for two pounds, is 80 pounds; Four hunder let be keepe upen your beſt hained Graſs, which may

may be sold I suppose at 5 pound a peece, betwixt *Candlemas* and *May*, is 200 pound, proportionable to their Number.

Their Wool may also be reckoned more in quantity, than these that are badly fed, for not only is the Wool best on fat Sheep, but it is much thicker and longer also. I suppose therefore this three hundered and fiftie Sheep and Lambs, may not only have as many pounds of Woole, but even one Quarter of a pound a peece more, which maketh in all, four thousand three hundered and seventy five pounds of Wool, which is two hundered and seventy five Stone, seven pounds, reckon this at nine pounds *per* Stone, is two thousand four hundered and fiftie seven pounds in Money.

The Product of this Mailen, Stock-

ed and Ordered as above represented, after the Expence of Seed and Labouring the manured Land, is deduced, as follows,

Imprimis, *Corn worth*	2960	00	00
Lambs worth	0090	00	00
Sheep sold in Autumn	0800	00	00
Sheep sold in the Spring	1600	00	00
Wool to the Value of	2457	00	00
Summa,	4907	00	00

The Product of the Mailen, as in the first Description is,

Imprimis, *Lambs*	0120	00	00
Wool	2070	00	00
Sheep	1800	00	00
Summa,	4890	00	00

This 4890 pounds deduced from 7907, there remains 3037, so much more Increase is there by managing this Mailen, as I have above demonstrated

ſtrated (except 200 pound, to be deduced for Shearers Wages, and what profit is alleadged to be made of Ewes Milk) than was made of it according to the firſt way of Managing thereof: And call that what ye pleaſe, the Profit is conſiderable ſtill.

CHAP. VI.

Something Concerning Planting.

I Shall be as brief as poſſible in in ſpeaking to this Head; Both becauſe I have inſiſted beyond my Expectation in the foregoing Chapter; And alſo, becauſe abundance have been already written on this Subject, better than I can pretend to do.

What I intend here, is only to give *Husband-men* (who have not occaſion to ſee ſuch books as treat on this ſubject) a ſhort hint of what may concern them, in this kind of Labour.

You

You may remember *I* recommended planting as a great mean to help to enrich your Ground, and Fruit-trees, as very beneficial, in respect of their Fruit. The expence of purchasing or upbringing of them, is in a manner nothing at all, a dayes labour or two of one Man once in the year, may bring up a greater Nursary than you will need; Take *S*eed of any kind of Trees you desire to have brought up, and dress a little bit of your Garden, and sow or plant them there. Be sure not to suffer any Weeds to grow amongst them, when you sow Seed of Trees, and they rise closer than they can well grow together, transplant them to another place of your Garden, a foot or eight inches distance is enough, while they remain in the Plant Bed; Plant but one hundered, yea, half that number every year, will soon plant all your hedges. When they are about six

or

or eight years old, replant them about the borders of your Fields.

Fruit-trees may as eaſily be brought up as theſe which are barren, only they need to be ingraffed, which is done thus; When they are full inch thick, or tho they be bigger, they may be ingraffed alſo, either by cutting of the Branches, and ſputing a Graff in the ſtump of each Branch, or yet in the principal Stock, which (if it be thick) muſt have four or five Graffs, the manner of performing is thus, either with a Saw, or ſharp Knife, cut your Stock about a foot and a half from the Ground, and after you have made it very ſmooth, take and ſlit it down a pretty bit, that it may receive the Graff; Your Graff muſt be Twigs of the handſomeſt Fruit-trees you can get, of one years growth, only let an inch and a half, or thereby, of that which is under the

the upermoſt Knot remain with the Twig, and that peece which is under the Knot, make in form a wedge, but let the bark or reind remain upon the edges of it, then put it into the Stock, joyning the reind of the Graff, exactly with the reind of the Stock, then put a peece of Clay upon the top of your Stock, to defend it from Rain, till the wound cloſe, and forget not to cut the top off your Graff, if it be long, the length thereof ought not to exceed ſix inches.

As to the manner of planting your Fruit-trees, obſerve to plant them at thirty foot diſtance at leaſt, and if the Ground be cold on which they are planted, you muſt digg a hole two or three foot deep, and ſix or eight broad, where you intend to plant every Tree, and if you put not dung in the bottom thereof, you muſt at leaſt fill it with good Earth; Some

put

put Coals under their Trees) and then plant your Tree when it is filled up ſo far, that your Tree hath little enough deepth to root in, then ſet your Trees upon the fine Earth that you have laid in the bottem of this pit or holl; ſo muſt ye do with all your Barren Trees and Hedges, where the ground is very cold, for when the roots of a Tree, is placed upon cold tile or Clay, it cannot thrive: Wherefore in the planting of your Hedges, let the ground be dunged where it is firſt planted; And if the Ground be not naturally good, you muſt gather as much of the Cruſt of other Ground thereabout, as ſerve to plant your Hedge in. So much concerning Planting.

CHAP: VII.

Concerning Sowing and Planting of ſeveral Garden Seeds, and Roots.

IN this Art *I* profeſs not much Knowledge, Yet (perhaps) I have ſomething more than every Husband-Man, and all *I* intend here, is only to give ſome few Directions, to ſuch as are altogether ignorant in this matter, how to provide themſelves in ſome common Roots and Herbs, for the uſe of their Kitchens: Becauſe *I* have been recommending the Uſe of Roots and Herbs, as more profitable for Houſe keepers, than to make alwayes Uſe of Grain for Maintainance of their Families. Wherefore leaſt they object againſt my Advice, in pretending difficulties from their want of skill in this Art, and the natural Barrenneſs of the Ground.

To

To ſolve theſe difficultys, I ſay according to the Meaſures already laid down, for bringing every kind of Ground to a temperat Conſtitution, I have ſhown already that any kind of arable Ground may be made fertile by induſtrie: And I ſay again by Hedging and Planting, fence your Garden from Storm and dung it well, you may have Roots and Herbs abundance therein.

To bring your Gardens therefore to a good Condition. Firſt, Digg up or delve your ground, at firſt about a foot deep: The ſoard of your ground throw the bottom of the Furrow or Trench, and if there be any Weeds or ſtones in it, gather them out, this being done about *Hallowday*, or ſome time in the Winter; Then in the Spring, ſo ſoon as you find it ſeaſonable for ſowing of Seeds, dung your Garden and delve it over again, caſt-

ing it in Plots or Beds. And then you may ſow Carrot, Parſneep, Turneep, or Onion Seeds, or any other common Seeds you pleaſe, and as ſoon as any Weeds begin to ſpring, be ſure to pluck them up; In the Furrows you may plant Cabbage, I need not tell you how to ſet or plant common Kale, few or none but what has abundance of them already.

But when your Ground begins to fail, which perhaps it may do within twelve or ſixteen years, even thô ye dung it every year, by the frequent labouring and breaking up, it begins to fail, and turn ſomewhat dead or lifeleſs, which cannot be helped, but by letting it reſt two or three years, or elſe by Trenching, which is done thus, Firſt croſs your Breck or Plot of Ground, make a Ditch about two or three foot broad, four inches deeper than the Cruſt of the Earth, or deepth

deepth you have digged before, throw the Earth quite out, and ſcatter it upon the laigheſt part of your Plot, then dig as much of your Ground next to this Trench, and throw the upermoſt of the Earth into the bottom thereof; and the new Earth you find below lay uppermoſt; and when you have occaſion to Trench this Ground again, you muſt dig three or four inches deeper then before, and as often as ye Trench, raiſe three or four inches new ground, and dung it and ſow as before.

I alſo recommended Potatoes; as a very profitable Root for Husbandmen or others that have numerous Families; And becauſe there is a peculiar way of Planting this Root, nor commonly known in this Countrey: I ſhall here ſhew what way it is ordinarly planted or ſet. But firſt, know there be two ſorts of them, the one knotty

knotty and ſome thing rediſh colour-ed, the other long, ſome thing after an Oval Form and white, this laſt is ſet whole, and when the Stalk is grown up, a dozen or perhaps more Potatoes groweth round about the Root thereof, but the cornered ſort muſt be cut in ſmall peeces, before they be ſet.

Now the manner of Setting or Planting them, is thus, The ground whereon they are ſet muſt be dry, and ſo much the better it is, if it have a good Soard of Graſs. The Beds or Rigs are made about eight foot broad, good ſtore of dung being laid upon your Ground, (Horſe or Sheep Dung is the moſt proper Manure for them.) Throw each Potatoe into a knot of dung, and afterwards digg Earth out of the Furrows, and cover them all over, about ſome three or four inches deep; the Furrows left between

between your *Riggs*, muſt be about two foot broad. and little leſs will they be in deepth before your Potatoe be covered.

You need not plant this Root in your Garden, they are commonly ſet in the Fields and wildeſt of Ground, for enriching of it. The common way Potatoes are made uſe of, are boyled and broken and ſtirred with Butter or new Milk, alſo roaſted and eaton with Butter, Yea ſome make Bread of them by mixing them with Oat or Barley Meal, after they are broken & ſtirred with Milk, other parboyl them, and bake them with Aples, after the manner of Tarts: Several other wayes are they made uſe of, as eating among Broath, & broken with Kale. To be brief, *P*otatoes are as uſefull and profitable about a Husbandmans Houſes, as any kind of food, I know.

I might insist in shewing farther, How any Farmer possessing a Mailen as in *Chap:* 3. May by Roots and Herbs, not onely save ten Bolls of his Grain, but even ne're twice so much. From the middle of *August* till *January* he may have *Potatoes*, in *March* and *April Parsneeps*, from *May* to *October*, abundance of Milk, Kail and Carrots, and Turnneeps, *&c.* after *Lambmass*. But having insisted beyond my Expectation, let what is said suffice at the time, and if this pass the *Press* again (there being but a few Coppies of this *Impression*) perhaps the World may have it with some Addition and Amendments; In the preceeding Chapter as a special means to enrich your Ground, *I* thought to have informed you, that where you can have the Conveniencie to set Water upon your Land, it will much encrease the growth of Grass.

The

The way to perform this, where you can draw a Ditch alongst the head of your Field, and foregainst the head of every Rigg, make a little Gape, that you may close or leave open at your pleasure, and then draw Furrows with your Plough and Spade squint wayes in the declining of the Hill, from the Furrow between your Riggs, to the top or middle thereof, where it is left without any Conduit; Then it spreadeth, and watereth the Ground. But that it may not run away as soon as it falleth down to the Furrow again, you may raise it to the middle of the Rigg as before. Thus renew your Conduits, till it come to the lowest part of the field.

CHAP. VIII.

Several Objections Solved.

NOt to consume time, I shall as briefly as possible, answer to

some of the most material Objections I judge may occure; And in the first place, me thinks I hear some thick scul'd Peasant, that sees as far in States Affairs, as a Mear doth in a Mill-stone; saying, *What?* And, *From whence came you Sir? That offers to teach us how to labour our Ground, We and our Fathers have been bred in Husbandrie these many Generations, and if there had been any Mistery in it to find, would not they have found it out before this time? Are you Wiser than all that ever have been bred and exercised in* Husbandry *hitherto? Away with your fool Notions, there are too many Bees in your Bonet-case, we will satisfie ourselves with such Measures as our Fathers have followed hitherto.*

CHAP. VIII.

Solve, Soft Friend, one Question at once, you run on with a full Carrier; However, to your first two Questions, I say, I ad neither *Italian*, *Ger-*

man, not of any other Forraign Nation and therefore likely to be the less noticed, what farther concerns these Questions, satisfie your self with the acount given in the Epistle Dedicatory. What you or your Fathers have been bred to, or what Misterys they might have found, I question not, neither pretend I to any great Measure of Wit. But grant that what I advise to were new, as it is not, for many in this same Kingdom, and the greatest part of all others I either have seen or heard of, have found the Truth of what I say to their Experience, and if you will make Wit and Reason yeeld to Will and Custom, I have no more to say, brook your Opinion.

Object: 2. Some more grave person I fancy, asketh me what may be the Reasons; For (*ye know there is never a Tale without a Reason*) why this

Method I advise to, is so universally concemned in this Kingdom, if such Benefit as I pretend may be had by following of it.

Solve, So fare as I can understand, the Causes are all or either of these three, the Maladies of two of them your Landlords may remove, and if you take my advise, the third you may remove your selves.

First, When a Tenent makes any Improvement of his Ground, the Landlord obligeth him either to augment his Rent, or remove, in so much that its become a Proverb (and I think none more true) *Bouch and Sit, Improve and Flit.* I doubt not but if Fermers had good Security for continuing in possession of their Lands, but they might thereby be much Encouraged to improve them. Another Cause why Fermers make so little Im-

Improvement of Lands in their Poſſeſſion, is Poverty, that great enemy to vertue, for people that are empty handed, are glad to accept any thing that firſt offers, rather than wait for future great things. Landlords might alſo give their Tenants Encouragement in this Caſe, by ſparing the Rent for a time. But the principal or chief Cauſe, is peoples want of Skill to calculat or forecaſt the Ordering of their Matters, moſt people thinking it better to take a ſcant Crop of Corn, than leave their Land Graſs, not conſidering, that by leaving a part of their Land in Graſs, the reſt that is manured, geteth the greater allowance of Dung, whereby it is Enriched: And that part left in Graſs, is alſo thereby brought to a more fertile Condition. It is needleſs here to inſiſt on this point, having ſpent whole three Chapters already, in ſhewing how I would have Fermers divide

divide their Lands, and take only so much into manure, as they are able sufficiently to keep in a good Condition.

The two Parables our Saviour adduceth, concerning a King's making War; And other Men's going about to build: That they ought to forecast the Charge, and how they may be able to accomplish their Undertakings; I say, tho that Text is chiefly to be taken in a *Spiritual Sense*, yet may it be taken in a Literal Sense also; For when a Man undertaketh any Business whatsoever, that is above his power to accomplish, ten to one but his project doth miscarrie.

And I think *Aristotle* spoke Truth, when he said, *He that is ignorant of Arithmetick, is fit for no Science*, which was also the Opinion of *Plato*, when he

he affixed this Inscription over his School-door, *Let none enter in hither, that is ignorant of Geomitry*; When there is so much of it needed in the right Management of Husband Labour, as you may see in Chapter 3, 4, and 5. which is of all Employments, the most plain and natural; How much more is it requisite in other Sciences and Employments.

Object: 3. But tho the Method you propose, should be followed, yet no such profit will come thereby, as you would make us believe; For in your Calculation Chapter third, you reckon all things at a disadvantage, in your first Example, and all things to the Advantage in the second.

Solve, The contrare is true, for according to the division of Croft and Out-field, in the third Chapter, I make the Land taken into Croft, get

more

more than double allowance of *Dung* which the other had, and the difference of product is only three Bolls, which I doubt nothing of, but it may be more: Nevertheless, admit there be but two Bolls of difference, that is to say; allow the Croft according to the first way of manuring, to produce five Bolls *per* Aiker, the odds will be greater than I reckoned it at, when you defaulk the 150 pounds, I pay more Rent for the last Mailen, and beside, there was six Bolls of Seed, and four of Horse Corn saved, which was not reckoned in that Account, and why the Out-field in the latter Case, may bear one Boll more *per* Aiker than the first, I suppose satisfying Reasons were given already. As for the profit on the Cattle, I think none can doubt of it.

Ob: 4. Your Hedging and way of Manuring recommended *Chap: 4th:* is

is so difficult, that the Charge will exceed the profit, Moreover the Hedges will not grow on any Barren Ground.

Solus. The Expence and Profit are both there reckoned, and the contrast doth appear; As for Hedges growing, I have shewed already, that any kind of Ground, by Industry may be made fertile: However, for your more particular Information, concerning planting of Hedges, I say, digg a ditch on every side of your Hedge, or at least one on the out-side thereof. Take the crust of the Earth you digg out of your ditches, and lay next to the root of your Hedge, and if the Ground be very Barren or cold, mix dung therewith, for as I observed when I spoke concerning planting, when the roots of Trees are fixed in cold *Tile* or *Clay* (tho the Tree it self may be nourished by Dew and Rain,

without extracting any Strength forth of the Earth, as I have seen a Tree growing out of a Wall, which had no other kind of Nourishment, but what it received from Dew and Rain) doth in a manner frize, or as it is vulgarly termed, *Dozz'ns* the Root, so that it cannot thrive: But when a Tree is planted in Ground that is any thing warm, as the Surface or Crust of the Earth in all places is, for it is warmed by the Sun's Beams, and Salt it receiveth in Dew and Rain; And your Hedge being therein planted as is shewed above. And then to preserve your Hedge while it is young, let your Fields about them be Corn, so Beasts will have no access to them in Summer; And in Winter, Cattle seeing nothing to tempt them to break into your inclosed Fields, the Hedge and the ditch it selt, will be sufficient to restrain them.

Ob-

Object. 5. But you ſpeak of Hedges keeping the Ground warm; Pray, What ſhelter hath the Ground by your Hedge, except a Rigg or wo lying next to it?

Solve, You may remember, I alſo recommended planting of Trees in your Hedges, which will alſo ward off the Storm; But even the Hedges themſelves (if any thing tall) will ſhelter more than the breadth of a dozen of Riggs of Ground: And if your Incloſures be not too large, ſcarce any bit thereof will be altogether void of ſhelter from Storm, as is ſaid.

Another great Benefit had by Incloſing, Is, the Fields are thereby preſerved from being trampled on by Cattle, which doth not only break the Soard of Graſs, but alſo with their feet, make holes wherein Water doth ſtand, and thereby the Ground is keeped cold

Object. 6. You lately recommended setting Water upon our Grass, as a peece of great Improvement, and now ye tell us, that Water standing in the footsteps of Cattle, doth the Ground much injury.

Solve, Both these may very well be; For Water set upon the Ground, as was shew'd above, leaveth the Salt that is in it behind, and runneth away it self, but that which standeth in footsteps of Cattle, cooleth the Ground, as is said, and also moistereth it too much.

Object. 7. In your fifth Chapter, you recommend housing of Sheep, and taking part of that Ground into Manure, neither of which is practicable, for the Land is so Mountainous that it cannot be ploughed; And it were hardly possible for us to get Hurts built for so great a Number of Sheep.

Solve,

Solut. Where the Land is Mountainous and cannot be ploughed, lay the dung of your Cattle upon the Grass, and not to plough it at all; But this needs not hinder People to plough their Ground, where it is ploughable. And for the trouble of building Hutts for your Sheep, the profit of their dung will much more than ten times recompence that trouble: Yea, that which will buy Tarr and *Butter* for *Shiring* your *Sheep* one year, will build them Hutts that will last ten years: And beside, the Sheep are both hereby keeped in a better Condition of body, and their Wool is also improven, as was shewed in Chapter fifth.

Object. 8. The Benefit of Sheep's dung, by keeping them in Hutts is nought; For whatever the Ground whereon it is laid may be thereby bettered, the pasture whereon they

used

used to be fed, must certainly be so much the worse, for when the Sheep ly in the fields, their dung is left upon the Pasture, by which it is Inriched.

Solve. There is some seeming Reason in this Objection, yet upon tryal it will be found to evaporate, for when the dung getteth leave to ly above ground, not only much of the Strength thereof is defused into the Air, and exhaled by the Sun's heat, but especially the Heat or Salt thereof is not able to overcome the natural Coldness of the Earth, in respect it is scattered here and there in small Quantitys. To illustrat this a little, take a peece of hot Iron, that is able to heat one pynt of Water, and put it into twenty or thirty pynts, it will soon be coolled, and the Water be little or nothing the warmer: So this Quantity of Dung that is sufficient to Warm or Enrich thirty Aikers of

Land

Land every year, being ſcattered up and down a thouſand Aikers, the Effect thereof is not known, as is found by Experience.

Object: 9. You adviſe us to dung our Paſture where the Ground is not arrable, which if we do, that Graſs, would root our Sheep.

Solve, I did ſo, and alſo there told you make Hay of it the firſt year, but leaſt ye object againſt this, I ſay, there is no Grouud whatſoever, that beareth Graſs, but it may be made ſo Fertile, that it ſhall grow to the length of Hay, or tho it did not, then might you feed on it the firſt year, other Cattle or Sheep you intend to fatten and ſell.

Object: 10. As for your Orch-yeards, and keeping of Bee's Hyves, theſe are for Gentlemen to look after,

ser, we must be taken up about some other Business, we have not time to spend in looking after such Conceits.

Solve, I shewed you already, there is Profit no less than pleasure to be had that way; Your Orchyeard, in effect, is nothing but a Hay-park, and beside the profit of Trees, which may be considerable you have as much of it as any so much Ground you possess. And the Bees require little pains or Expence, neither is there any fear of wanting Food for them. In the beginning of the year, the Blossomes of Trees, and Flowers growing amongst the Grass of your Orchyeard, and other places, will serve them; And in the latter end of Summer, the Blossomes of *Potatoes*, and *Pease* and Beans.

FINIS.